Vol. 902 Number 2

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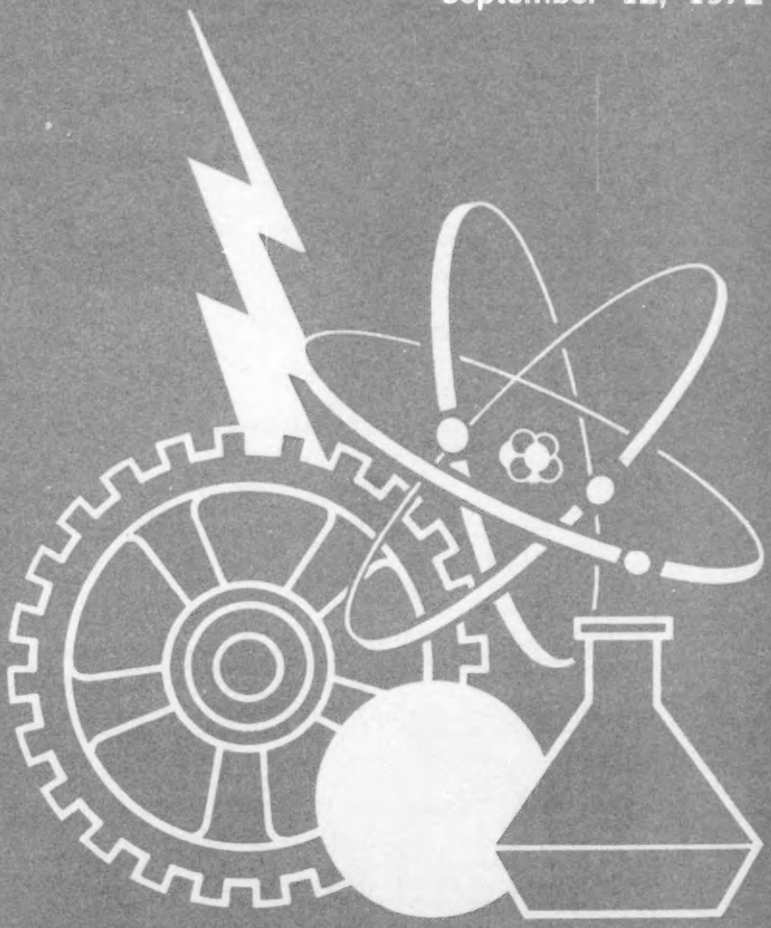
PATENTS

September 12, 1972



U. S. DEPARTMENT OF COMMERCE

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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

September 12, 1972 Volume 902 Number 2

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PATENT OFFICE NOTICES

Registration to Practice

The following list contains the names of former examiners who are applying for registration to practice before the Patent Office on the basis of 4 years or more service in the Examining Corps.

Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds should be furnished the Commissioner of Patents on or before Oct. 13, 1972.

Bronaugh, Frank H., 7417 Lynnhurst St., Chevy Chase, Md. 20015

Chapuran, Ronald F., 1655 Brookwood Drive, Elkhart, Ind. 46514

Henry, William A., II, 5245 Hayledge Court, Columbia, Md. 21045

Mangan, Philip E., 6305 Alcott Road, Bethesda, Md. 20034

May, Roger L., 661 Barclay Drive, Troy, Mich. 48084

Papuga, Donald Mark, 10911 Trafton Drive, Upper Marlboro, Md. 20870

Pokotilow, Steven B., 185 E. 85th St., Apt. 32M, New York, N.Y. 10017

LUTRELLE F. PARKER,
Aug. 10, 1972. *Chairman, Committee on Enrollment.*

Notice to Applicants, Attorneys and Agents Re Preliminary Classification of Patent Applications

The Patent Office is initiating a program for expediting newly filed applications through pre-examination steps. This program requires your cooperation to attain the desired result—a reduction in processing time.

We are, therefore, asking you to include a preliminary classification on newly filed applications. The preliminary classification, preferably class and subclass designations, should be identified in the upper right-hand corner of the letter of transmittal accompanying the application papers, for example, "Proposed class 2, subclass 129."

This program is voluntary and the classification submitted will be accepted as advisory in nature. The final class and subclass assignment remains the responsibility of the Patent Office.

RICHARD A. WAHL,
Aug. 11, 1972. *Acting Commissioner of Patents.*

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,734,225, E. A. Glynn, TREAD CENTERING DEVICE FOR TIRE MOLDS; 2,826,783, E. S. Robbins, QUICK ACTING TIRE RETREADING MOLD; 2,908,939, Eriksen and Roesch, BEAD ENGAGING PRESSURE RING UNIT, filed Sept. 15, 1971, D.C. Conn. (New Haven), Doc. 14627, *Super Mold Corporation* v. *J. E. Sheehan Tire Retreading, Inc.* Case dismissed on stipulation of parties, Feb. 23, 1972.

2,804,893, H. R. Carper, POWER ACTUATED BLOCK CLAMPING APPARATUS AND METHOD; 2,897,570, same, APPARATUS FOR MAKING COMPOSITE SLABS; 2,949,705, same, REINFORCED CONCRETE SLAB CONSTRUCTION, filed Mar. 13, 1972, D.C., W.D. Mich. (Grand Rapids), Doc. G58–72–CA, *Celdex Corporation* v. *Western Industries, Inc.*

2,826,783. (See 2,734,225.)

2,897,570. (See 2,804,893.)

2,908,939. (See 2,734,225.)

2,949,705. (See 2,804,893.)

2,974,426, H. C. McDonald, METHOD AND APPARATUS FOR MAKING IDENTIFICATIONS, filed July 19, 1971, D.C. Conn. (New Haven), Doc. 14534, *Colt's Inc.* v. *Bangor Punta Operations, Inc.* Case dismissed on stipulation of parties Feb. 3, 1972.

3,017,087, A. V. Bodeen, REGISTERING DEVICE, filed June 7, 1967, D.C., S.D.N.Y., Doc. 67–C–2210, *Ideal Toy Corp.* v. *Mattel Inc.* This action was closed in error on Feb. 23, 1972.

3,019,276, K. B. Harlow, COMBUSTION SYSTEMS FOR INTERNAL ENGINES, filed Apr. 19, 1972, D.C., N.D. Tex. (Dallas), Doc. CA–3–5785–B, *James E. Turner and James Turner & Assoc., Inc.* v. *Eugene Irvin, Jr. et al.*

3,029,477, Wildbolz, Binder, Staheli, AUTOMATIC CARDING PLANT, filed Oct. 8, 1969, D.C.S.C. (Charleston), Doc. 69–824, *Maschinenfabrik Rieter A.G.* v. *Greenwood Mills, Intervenor-Defendant: Continental/Moss-Gordin, Inc.* Order, patent valid; claims 1, 5, 6, 8 and 11 are infringed, Mar. 23, 1972.

3,036,884, D. W. Kaufmann, TREATMENT OF BULK SALT, filed Apr. 24, 1972, D.C., N.D.N.Y. (Utica), Doc. 72–C–217, *Morton-Norwich Products, Inc.* v. *International Salt Company.*

3,052,081, M. Wallshein, ORTHODONTIC ARCH WIRE CONSTRUCTION AND METHOD, filed May 1, 1972, D.C., E.D.N.Y. (Brooklyn), Doc. 72–C–551, *Melvin Wallshein* v. *G.A.C. International, Inc.*

3,081,392. (See 2,831,952.)

3,096,801, Miles, Brown and Ward, SEED POTATO CUTTER, filed Apr. 11, 1972, D.C. Idaho (Boise), Doc. C–4–72–13, *Milestone, Inc.* v. *Lockwood Graders of Idaho, Inc. et al.*

3,158,424, R. Bowen, CONTACT MOUNTING; 3,165,369, J. W. Maston, RETENTION SYSTEM FOR ELECTRICAL CONTACTS, filed Mar. 14, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c653, *Bunker-Ramo Corp.* v. *International Telephone & Tel. Corp.*

3,165,369. (See 3,158,424.)

3,190,395, M. H. Lill, VEHICLE SUPPORTING RACK; Re. 26,232, same, filed Aug. 5, 1968, D.C., E.D. Mo. (St. Louis), Doc. 68C355(A), *FMC Corporation* v. *Hunter Engineering Co.* Memo, opinion and judgment filed decreeing patents in suit invalid and void in law; denying defendant's prayer for attorneys' fees, defendant to recover from plaintiff its costs of this action, Mar. 28, 1972.

3,252,582, Kesilman, Penn and Kravitz, MODULAR DISH WASHER RACK; D. 201,383, same, COMMERCIAL DISH WASHER RACK, filed Aug. 29, 1967, D.C., S.D.N.Y., Doc. 67–C–3307, *Green Valley Products, Inc.* v. *The General Tire & Rubber Company.* Order, complaint is dismissed with prejudice, Apr. 5, 1972.

3,257,522, A. F. Raab, LINK AND SWITCH DEVICE FOR AUTOMOTIVE BRAKING SYSTEMS, filed Apr. 24, 1972, D.C., E.D. Wis. (Milwaukee), Doc. 72–C–228, *Wells Mfg. Corp.* v. *Littlefuse, Inc.*

3,258,061, A. Udin, ADJUSTABLE WINDOW GRILLE WITH COLLAPSIBLE BOTTOM GUARD BARS, filed Aug. 2, 1966, D.C., S.D.N.Y., Doc. 66–C–2378, *Albert Udin* v. *J. Kaufman Iron Works, Inc.* Filed judgment—ordered that the defendant have judgment against the plaintiff, dismissing the complaint, Apr. 17, 1972. Opinion, complaint dismissed—as to the counterclaims defendant is entitled to a declaratory judgment of invalidity, Apr. 10, 1972.

3,275,316, G. V. Cleary, Jr., INSERT FOR NEWSPAPERS, filed Apr. 28, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c1070, *Free Standing Stuffer, Inc.* v. *Holly Development Co.*

3,307,392, Owen and Isaacson, AUTOMATIC PROTHROMBIN TIMER APPARATUS AND METHOD, filed Apr. 28, 1972, D.C., S.D.N.Y., Doc. 72–C–1762, *Sherwood Medical Industries, Inc. & Research Corp.* v. *Medical Laboratory Automation, Inc.*

3,367,126. (See 3,474,723.)

3,474,723, Reimus and Saporito, BEVERAGE APPARATUS; 3,367,126, J. D. Howell, FLOATING AGITATOR; 3,495,522, J. G. Muller, BEVERAGE APPARATUS, filed Feb. 17, 1970, D.C. Del. (Wilmington), Doc. 3850, *Struthers Scientific & International Corporation* v. *General Foods Corporation.* Dismissed by consent of parties, Feb. 23, 1972.

3,495,522. (See 3,474,723.)

3,536,144, Hood and Osburn, ARTICULATED WHEELED FRAME FOR AGRICULTURAL IMPLEMENTS, filed July 15, 1971, D.C., W.D. Okla. (Oklahoma City), Doc. 71–446–C, *Blackwell Steel Products, Inc.* v. *Medford Steel Products, Inc.* Dismissed on stipulation of parties, Apr. 3, 1972.

3,570,748, Coyle and Marsella, COMPOSITE FILM AND METHOD, **filed** Apr. 26, 1972, D.C., S.D.N.Y., Doc. 72–C–1716, *Standard Packaging Corporation* v. *Milprint, Inc.*

3,613,044, W. G. Rarick, POWER SUPPLY CORD HATCH, **filed** Jan. 28, 1972, D.C., N.D. Ind. (Fort Wayne), Doc. 72–F–4, *Lyall Electric, Inc.* v. *Geisel Distributors, Inc. et al.*

3,622,980, F. R. Elledge, DIRECTIONAL WARNING SYSTEM, **filed** Apr. 20, 1972, D.C., S.D. Ohio (Cincinnati), Doc. 8380, *Casell Co., Inc.* v. *Baader-Brown Manufacturing Co.*

3,624,123, Lewis and Friedman, t-ALKYL PERESTERS OF t-HYDROPEROXIDES, **filed** May 1, 1972, D.C., S.D. Tex. (Houston), Doc. 72–H–570, *Argus Chemical Corporation* v. *Pennwalt Corporation.*

3,642,147, G. H. Voorhies, HANGER DEVICE, **filed** Apr. 21, 1972, D.C., S.D. Ohio (Dayton), Doc. 4232, *Gerald H. Voorhies* v. *A–1 Ornamental Iron, Inc. and Graves & Marshall Co.*

3,650,766, Y. Smadar, EXTRUDED FOOD PRODUCTS AND METHOD OF PRODUCING SAME, **filed** Mar. 21, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c725, *DCA Food Industries Inc.* v. *Korlow Corp. et al.*

3,658,515, G. A. Saltzman, HARD WEAR-RESISTANT FERROUS ALLOY, **filed** Apr. 25, 1972, D.C., E.D. Wis. (Milwaukee), Doc. 72–C–232, *International Rectifier Corp.* v. *Donald P. Lomax.*

Re. 26,232. (See 3,190,395.)

Re. 27,018, Bolkcom and Knapp. SILICON CARBIDE FURNACES AND PLANTS, **filed** Apr. 24, 1972, D.C., E.D. Tenn. (Knoxville), Doc. 7840, *Wilbur T. Bolkcom and William E. Knapp* v. *The Carborundum Company.*

D. 201,383. (See 3,252,582.)

D. 210,015, R. D. Kahn, INSECT ELECTROCUTING TRAP, **filed** Apr. 11, 1968, D.C.N.J. (Newark), Doc. 341–68, *Fedtro, Inc.* v. *Spencer Gifts of Paramus, Inc. et al.* Consent order dismissing action, Apr. 28, 1972.

D. 222,198, M. H. Boldt, HAIR DRYER, **filed** Apr. 25, 1972, D.C. Mass. (Boston), Doc. 72–1359–G, *National Presto Industries, Inc.* v. *General Wholesale Supply Company.* Same, **filed** Apr. 25, 1972, D.C. Mass. (Boston), Doc. 72–1360–G, *National Presto Industries, Inc.* v. *Zayre Corporation.* Same, **filed** Apr. 25, 1972, D.C., N.D. Ohio (Cleveland), Doc. C–72–397, *National Presto Industries, Inc.* v. *Union Savings Assn.* Same, **filed** Apr. 26, 1972, D.C., E.D.N.Y. (Brooklyn), Doc. 72C535, *National Presto Industries, Inc.* v. *Merit Enterprises, Inc.*

Patent Numbers For Which No Patents Exist

Issue of September 12, 1972

3,689,959	3,690,447	3,690,764	3,691,146
3,689,975	3,690,455	3,690,781	3,691,156
3,690,001	3,690,458	3,690,817	3,691,175
3,690,022	3,690,459	3,690,843	3,691,182
3,690,025	3,690,467	3,690,859	3,691,200
3,690,042	3,690,493	3,690,871	3,691,208
3,690,046	3,690,508	3,690,877	3,691,254
3,690,060	3,690,512	3,690,897	3,691,259
3,690,069	3,690,541	3,690,919	3,691,292
3,690,073	3,690,553	3,690,951	3,691,293
3,690,081	3,690,592	3,690,952	3,691,299
3,690,089	3,690,612	3,690,960	3,691,307
3,690,104	3,690,624	3,690,973	3,691,351
3,690,117	3,690,630	3,690,991	3,691,355
3,690,119	3,690,637	3,691,006	3,691,362
3,690,129	3,690,651	3,691,024	3,691,367
3,690,173	3,690,653	3,691,025	3,691,369
3,690,178	3,690,659	3,691,028	3,691,395
3,690,185	3,690,669	3,691,034	3,691,420
3,690,190	3,690,677	3,691,035	3,691,451
3,690,275	3,690,681	3,691,039	3,691,458
3,690,322	3,690,683	3,691,044	3,691,468
3,690,342	3,690,700	3,691,057	3,691,480
3,690,346	3,690,711	3,691,094	3,691,507
3,690,355	3,690,718	3,691,114	3,691,530
3,690,419	3,690,740	3,691,115	3,691,532
3,690,424	3,690,755	3,691,122	3,691,550
3,690,442	3,690,757	3,691,137	

Certificates of Correction for the Week of Sept. 12, 1972

D. 220,920	3,611,417	3,642,569	3,655,568
D. 222,160	3,612,007	3,642,658	3,655,663
3,475,561	3,612,463	3,642,752	3,655,978
3,503,701	3,612,916	3,643,082	3,656,177
3,513,761	3,613,480	3,643,187	3,657,158
3,515,567	3,614,661	3,643,782	3,657,514
3,519,175	3,615,885	3,643,820	3,657,568
3,532,396	3,616,013	3,644,079	3,657,582
3,535,306	3,617,614	3,644,135	3,657,625
3,546,201	3,617,905	3,644,712	3,658,121
3,549,637	3,618,027	3,645,162	3,658,541
3,565,932	3,620,538	3,645,832	3,658,651
3,569,920	3,621,749	3,645,906	3,658,952
3,574,631	3,621,770	3,646,096	3,659,223
3,576,478	3,621,829	3,646,579	3,660,008
3,585,629	3,622,165	3,646,798	3,660,352
3,586,087	3,624,183	3,646,981	3,660,413
3,586,490	3,624,344	3,648,513	3,660,611
3,587,713	3,625,295	3,649,289	3,660,808
3,590,826	3,625,913	3,649,554	3,661,242
3,591,250	3,630,149	3,649,572	3,661,598
3,594,895	3,630,656	3,649,671	3,661,932
3,597,126	3,631,025	3,649,681	3,661,953
3,598,515	3,632,680	3,650,274	3,662,124
3,598,865	3,632,884	3,650,306	3,662,209
3,599,711	3,633,668	3,650,419	3,662,211
3,600,448	3,634,116	3,650,466	3,663,890
3,601,291	3,634,398	3,650,707	3,664,307
3,601,398	3,635,613	3,651,070	3,664,746
3,601,469	3,635,965	3,651,400	3,664,780
3,601,634	3,636,444	3,651,451	3,665,245
3,602,734	3,636,532	3,651,540	3,665,500
3,605,479	3,636,808	3,652,187	3,666,142
3,606,396	3,637,406	3,652,364	3,666,349
3,607,157	3,637,755	3,653,596	3,666,985
3,607,970	3,638,139	3,654,192	3,667,008
3,608,992	3,639,694	3,654,224	3,667,119
3,609,577	3,639,989	3,654,304	3,667,247
3,609,601	3,640,004	3,654,741	3,667,628
3,609,729	3,640,370	3,655,038	3,667,954
3,610,537	3,640,770	3,655,217	3,668,271
3,610,817	3,641,555	3,655,392	
3,611,171	3,641,755	3,655,478	

Dedications

3,033,988.—*Harold E. Edgerton,* Belmont, Mass. METHOD OF AND APPARATUS FOR THE CONTROL OF ELECTRIC IMPULSES. Patent dated May 8, 1962. Dedication filed, Apr. 13, 1972 by the assignee, *Honeywell Inc.*

Hereby dedicates to the Public the remaining term of said patent.

3,275,306.—*Bernard C. Phillips,* Toledo, Ohio. FUEL FEED AND CHARGE FORMING APPARATUS. Patent dated Sept. 27, 1966. Dedication filed July 3, 1972, by the assignee, *Borg-Warner Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,432,810.—*Humberto R. Cordero,* Endicott, N.Y. ADDRESSING SYSTEM FOR A COMPUTER EMPLOYING A PLURALITY OF LOCAL STORAGE UNITS IN ADDITION TO A MAIN MEMORY. Patent dated Mar. 11, 1969. Dedication filed Mar. 3, 1972, by the assignee, *International Business Machines Corporation.*

Hereby dedicates to the Public the entire term of said patent.

Disclaimers

3,441,071.—*Peter T. Schurman,* Snyder, and *Raymond C. Confer,* Gasport, N.Y. PLASTIC CONTAINER. Patent dated Apr. 29, 1969. Disclaimer filed June 14, 1972, by the assignee, *W. R. Grace & Co.*

Hereby disclaims all that portion of the term of the patent subsequent to May 9, 1984.

3,565,931.—*Lawrence Robert Brecker,* Brooklyn, N.Y. PROCESS FOR PREPARING ORGANOTIN MERCAPTO CARBOXYLIC ACID ESTER SULFIDES CONTAINING MORE THAN 18% TIN. Patent dated Feb. 23, 1971. Disclaimer filed June 19, 1972, by the assignee, *Argus Chemical Corporation.*

Hereby enters this disclaimer to claims 10, 11, 15, 19, 20 and 21 of said patent.

3,575,686.—*John William Case, Norman Frederick Crowder,* and *Wilfred Arthur Stephen White,* Runcorn, England. TREATMENT OF TEXTILES. Patent dated Apr. 20, 1971. Disclaimer filed Dec. 15, 1969, by the assignee, *Imperial Chemical Industries Limited.*

Hereby disclaims the portion of the term of the patent subsequent to Nov. 4, 1986.

3,616,088.—*Stanley M. Weir,* Palo Alto, Calif. WAREHOUSE CARRIER WITH LABEL MEANS THEREON. Patent dated Oct. 26, 1971. Disclaimer filed June 21, 1971, by the assignee, *FMC Corporation.*

Hereby disclaims all that portion of the term of the patent subsequent to Apr. 23, 1985.

3,625,755.—*Earle M. Potrafke,* Wilmington, Del. SUPPORTED METAL SALT/PHOSPHINE COMPLEXES AND METALLIZED PRODUCTS THEREFROM. Patent dated Dec. 7, 1971. Disclaimer filed Aug. 20, 1970, by the assignee, *E. I. du Pont de Nemours and Company.*

Hereby disclaims all that portion of the term of the patent subsequent to Apr. 15, 1986.

3,629,551.—*Masao Ando*, Yokohamashi, Japan. CONTROLLING HEAT GENERATION LOCALLY IN A HEAT-GENERATING PIPE UTILIZING SKIN-EFFECT CURRENT. Patent dated Dec. 21, 1971. Disclaimer filed June 22, 1971, by the assignee, *Chisso Corporation*.

Hereby disclaims the portion of the term of the patent subsequent to Dec. 20, 1983.

3,642,801.—*Ernst Seeger, Wolfhard Engel, Helmut Teufel, Hans Machleidt, Heinrich Ueberberg*, and *Hanns Ihrig*, Biberach an der Riss, Germany. N-SUBSTITUTED 1-PYRIDYL-2')-1,2,3,4 - TETRAHYDRO-ISOQUINOLINES AND SALTS. Patent dated Feb. 15, 1972. Disclaimer filed Apr. 8, 1971, by the assignee, *Boehringer Ingelheim G.m.b.H.*

Hereby disclaims that portion of the term of the patent subsequent to July 22, 1986.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF AUGUST 22, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	7-09-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	6-01-71
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	8-02-71
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	7-02-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—Director (Vacant). Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	4-02-71
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	12-29-71
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	6-08-71
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	9-14-71
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—Director (Vacant). Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	5-17-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	9-27-71
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts: Household, Personal and Fine Arts.	2 23-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	7-23-71
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus: Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	6-09-71
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	8-03-71
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control: Lubrication.	8-23-71
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	7-01-71

Expiration of patents: The patents within the range of numbers indicated below expire during September 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,716,748 to 2,719,293, inclusive
Plant Patents..... Numbers 1,417 to 1,422, inclusive

PATENTS

SEPTEMBER 12, 1972

GENERAL AND MECHANICAL

3,689,939
NECK CLOSING SMOCK OR GOWN

Glenn N. Taylor, Barrington, Ill., assignor to The Kendall Company, Walpole, Mass.

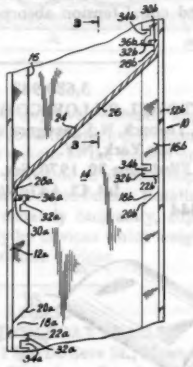
Filed Nov. 16, 1970, Ser. No. 89,966
Int. Cl. A41b *9/00*
U.S. Cl. 2—114 11 Claims

A back-opening smock or gown which may be worn as a protective garment generally but which is particularly useful as a hospital gown for patient examination, as a nurse's gown, a doctor's smock, or as a surgeon's operative gown. A feature is an overlapping neck closure in which two or more projecting studs engage female elements to close the gown opening. The studs, fastened to the underside of the overlap at the neck, readily mate by projecting partially through an equal number of a series of female elements in the overlying portion of the gown opening at the neck. The closure permits adjustment of the neck size and width of the opening overlap.

3,689,940
METHOD OF ASSEMBLING A FRAME AND PANEL

Louis Sommerfeld, 165 West End Ave., New York, N.Y.

Division of Ser. No. 861,781, Sept. 29, 1969, Pat. No. 3,577,864. This application Aug. 24, 1970, Ser. No. 66,517
Int. Cl. B23p *15/26, 19/00*
U.S. Cl. 29—157 R 4 Claims



An assembly which includes a frame and an air-guiding panel such as a louver. The frame has a pair of panel-carrying vertical ribs respectively formed with notches while the panel has opposed edge portions of a cross section matching that of the notches and received therein. Each of the ribs of the frame is provided next to its notch with a deformable locking nib while the edge portion of the panel adjacent to the locking nib is formed with a locking cutout. According to the method of the invention after the panel is situated within the notches of the ribs, the deformable locking nib is bent into the locking cutout to remain therein for providing a positive lock between the panel and the frame, thus preventing the panel from snapping or otherwise being removed out of the frame.

3,689,941
METHOD OF FABRICATING AND SOLDERING STAINLESS STEEL PARTS

Andre Chartet, Meudon, France, assignor to Societe Anonyme Des Usines Chausson, Asnieres, France

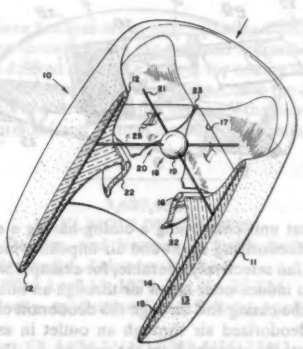
Filed June 23, 1970, Ser. No. 49,154
Claims priority, application France, June 30, 1969, 6922044
Int. Cl. B21d *53/02*
U.S. Cl. 29—157.3 R 6 Claims

The two faces of a sheet or thin strip of stainless steel are covered with a thin coating of lead, and is used for constituting the tubes, collector, water-boxes as well as the pipes of a radiator, and the parts thus made are soldered together with a tin-lead alloy by the same operational cycle as with corresponding parts made of brass or copper.

3,689,942
PROSTHETIC HEART VALVE

Richard K. Rapp, 1251 Imperial Dr., Glendale, Calif.

Continuation-in-part of Ser. No. 880,674, Nov. 28, 1969, abandoned. This application Sept. 15, 1970, Ser. No. 72,449
Int. Cl. A61f *1/22*
U.S. Cl. 3—1 17 Claims



A prosthetic heart valve consisting of a cylindrical housing having a substantially rectangular opening therein and a plurality of triangular flaps pivotally secured to the housing within the opening. The flaps are adapted to pivot open in response to the flow of blood from the heart and pivot to a sealing position, in abutment to a sealing ball which controls the position of the flaps, in response to the back flow of the blood, thereby providing uni-directional flow.

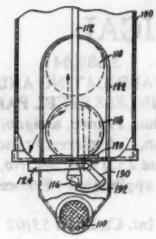
3,689,943
RESERVOIR

David H. Sharp, 318 Linnert Crescent, Strathmore, Quebec, Canada

Filed March 30, 1970, Ser. No. 23,938
Claims priority, application Great Britain, March 31, 1969, 16,818/69
Int. Cl. E03d *3/00*
U.S. Cl. 4—28 5 Claims

The invention provides a liquid retaining and dispensing apparatus which has a reservoir adapted to retain a liquid therein, an inlet port, an outlet port, a valve adapted to mate in sealing engagement with said outlet port and movable valve

displacing means adapted to displace said valve from sealing engagement with said outlet port. In the various embodiments disclosed, the outlet valve is preferably a spherical valve, with



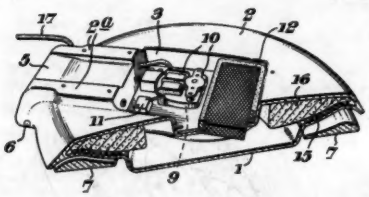
various forms of movable valve displacing means to engage the valve. The reservoir may be of the type adapted to operate under pressure, while in other embodiments disclosed may be a conventional unpressurized type.

3,689,944

TOILET DEODORIZING APPARATUS

Cyril Reginald Clayton, 20 Branksom Road, St. Leonards-on-Sea, Sussex, England

Filed Nov. 2, 1970, Ser. No. 86,220
Int. Cl. E03d 9/05
U.S. Cl. 4—213 5 Claims



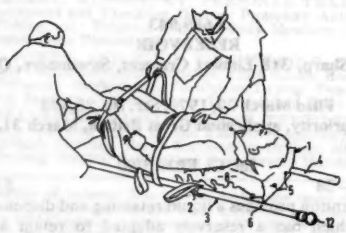
Toilet seat unit comprising a casing having a chamber for housing a deodorizing agent and air impelling means such as an electric fan selectively operable, for example when the seat is raised, to induce odor laden air through an inlet on the underside of the casing and through the deodorant chamber, and expelling deodorized air through an outlet in said chamber which directs the air away from the unit.

3,689,945

STRETCHERS

Asmund S. Laerdal, Stavanger, Norway

Filed Aug. 27, 1970, Ser. No. 67,504
Claims priority, application Germany, Sept. 3, 1969, P 19 44 646.9
Int. Cl. A61g 1/00, 7/10
U.S. Cl. 5—82 10 Claims



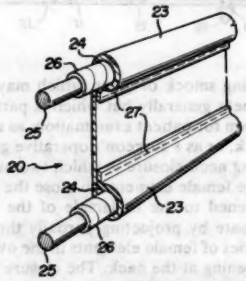
A stretcher with a vacuum mattress and carrier poles for it, the vacuum mattress having an air impermeable cover enclosing an interior which can alternatively be filled with air or evacuated by a vacuum pump, and which contains a granular material. In order that it should always be available, independent of human factors, when the stretcher is used, and should be capable of connection to the mattress as a preparatory measure, a vacuum pump is mounted in at least one tubular region of one or both carrier poles.

3,689,946

SEAT EDGE SPACER

Jere B. Ambrose, Pontiac, Mich., assignor to Northern Fibre Products Company, Birmingham, Mich.

Filed May 18, 1971, Ser. No. 144,098
Int. Cl. A47c 23/02
U.S. Cl. 5—261 3 Claims



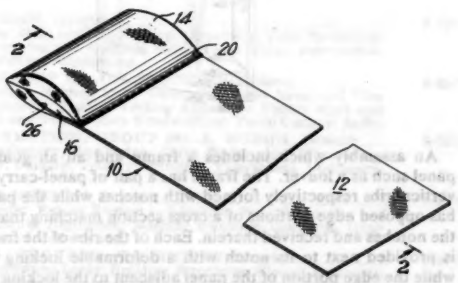
A box-spring type seat construction formed of an upper frame, a lower frame and interconnecting coil springs, with a horizontally elongated fabric strip having wire stiffened upper and lower edges secured to the upper and lower frames respectively at the forward edge of the seat construction, with the strip vertically extending between the frames for limiting the expansion of the springs. The strip is formed of fine strands of linearly oriented polypropylene felted into a randomly oriented non-woven, smooth sheet for roughly equal stretch resistance and equal tension absorption in all of its planar directions.

3,689,947

TOWEL-PILLOW COMBINATION

Barnet Wolf, Teaneck, N.J., assignor to Franco Manufacturing Co., Inc., New York, N.Y.

Filed June 30, 1970, Ser. No. 51,166
Int. Cl. A47g 9/00
U.S. Cl. 5—344 2 Claims



A towel which is combined with a pillow so that a person may recline on the towel placing his head comfortably on a pillow. The towel is formed at one end with a pocket in which the pillow is removably located, and the pillow is preferably inflatable so that it can be deflated to facilitate storage while at the same time it can be removed to facilitate washing of the towel.

3,689,948

POLYVINYL ALCOHOL GEL SUPPORT PAD

David J. Graves, Ridley Park, Pa., and Charles R. Ritchey, Fort Sam Houston, Tex., assignors to The United States of America as represented by the Secretary of the Army

Filed June 9, 1970, Ser. No. 44,838
Int. Cl. A47c *27/08, 27/00*
U.S. Cl. 5—348 4 Claims

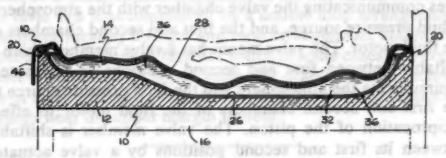
A polyvinyl alcohol gel pad. The gel pad has properties which make it useful as a support pad in the prevention and treatment of decubitus ulcers (also known as pressure sores) and for other purposes. The polyvinyl alcohol gel is made by cross-linking high molecular weight polyvinyl alcohol using a cross-linking agent, such as formaldehyde, in the presence of an acid catalyst, such as hydrochloric acid, and by incorporating at least one internal plasticizer, such as propylene glycol, in the gel. The support pad is completed by putting a thin-film envelope around the gel.

3,689,949

FLOTATION APPARATUS

James D. Weinstein, Philadelphia, Pa., and Barry A. Davidson, Boston, Mass., assignors to Scott Paper Company, Delaware County, Pa.

Filed Sept. 17, 1965, Ser. No. 488,202
Int. Cl. A47c *27/08, 27/18*
U.S. Cl. 5—348 1 Claim



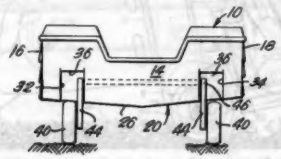
This invention relates to improved flotation apparatus and, in particular, to beds and seats in which provision is made for bouyantly supporting the weight of the person on the bed or the seat, an object of this invention to provide improved flotation apparatus. This invention provides a flotation structure for buoyantly, or approximately buoyantly, supporting the weight of a patient's body by devices which weigh much less than previously known flotation devices.

3,689,950

COMBINATION BOAT TRAILER

Jerzy George Jalowiecki, 1715 De Seve St., Montreal, Quebec, and Jan Metelski, 22, 58th Ave., Laval, Quebec, both of Canada

Filed March 31, 1970, Ser. No. 24,298
Int. Cl. B63c *13/00*
U.S. Cl. 9—1 T 7 Claims



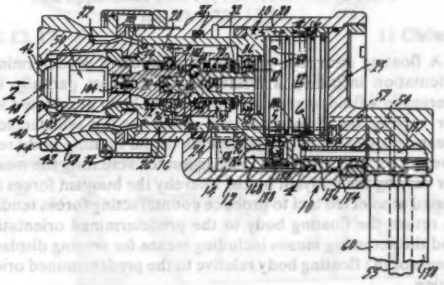
A boat construction having a pair of spaced-apart slots near the stern open to the bottom of the boat and the stern wall of the boat and a retractible running gear pivotally mounted in the slots between a land transport position and a retracted position. A detachable hitch having a three-point connection to the bow of the boat and a universal joint connection to a holding vehicle.

3,689,951

FASTENER INSTALLATION SYSTEM

George J. Van Hecke, Wayne County, and Robert D. Cassell, Oakland County, both of Mich., assignors to Huck Manufacturing Company, Detroit, Mich.

Filed May 7, 1970, Ser. No. 35,393
Int. Cl. B23p *19/08*; B21d *41/04*; B21j *7/16*
U.S. Cl. 10—155 R 12 Claims



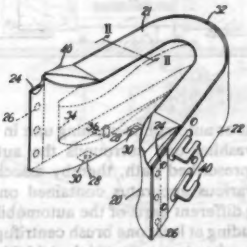
In a two piece fastener of the type including a bolt and a nut adapted to be threaded onto the bolt and thereafter crimped to provide a desired preload a system for setting the fastener including tool means for torquing the nut onto the bolt with a preselected torque and thereafter crimping the nut to provide the desired preload and control means to sequentially control the tool.

3,689,952

HEEL MOULDING BANDS

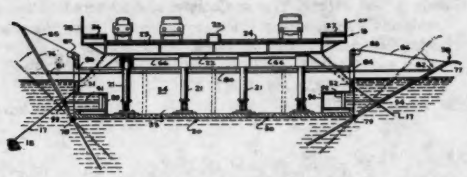
Peter H. V. Dawson, and Norman S. Smith, both of Union Works, Belgrave Rd., Leicester, England

Filed April 13, 1970, Ser. No. 27,534
Claims priority, application Great Britain, April 16, 1969, 19,334/69
Int. Cl. A43d *21/12*; B32b *5/16, 27/12*
U.S. Cl. 12—14.4 4 Claims



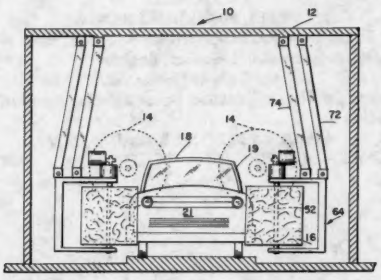
A method of making moulding bands for shoemaking machines in which a thermoplastic lining material having a low coefficient of friction is secured to a resilient material forming the body of the moulding band through a fabric material. The band has a lining suitable for engagement with a shoe upper, the lining being bonded to a resilient body through a fabric and the body having a cavity filled with a particulate material so the band accommodates to various dimensions and contours of a shoe form.

3,689,953
STABILIZED FLOATING STRUCTURE
Costas E. Markakis, 12 Aravantinou St., Athens, Greece
Continuation of Ser. No. 751,463, Aug. 9, 1968, abandoned. This application March 19, 1971, Ser. No. 126,287
Int. Cl. E01d 15/08
U.S. Cl. 14—27 28 Claims



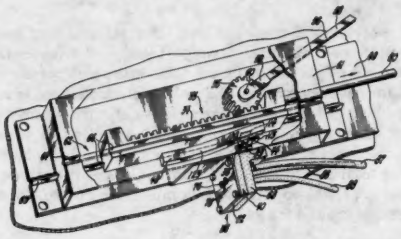
A floating structure adapted to maintain a predetermined orientation including a floating body at least partially immersed in a fluid, means mounted in the body at selected loci for varying the buoyant forces acting on the selected loci, means responsive to displacements of the floating body relative to the predetermined orientation for actuating the means for varying the buoyant forces whereby the buoyant forces are varied at selected loci to produce counteracting forces tending to return the floating body to the predetermined orientation and the actuating means including means for sensing displacements of the floating body relative to the predetermined orientation.

3,689,954
AUTOMOBILE WASHING UNIT
Howard E. Grant, c/o Trans-World Car Wash Systems, Inc., 65 Marine St., Farmingdale, N.Y.
Filed July 31, 1969, Ser. No. 846,481
Int. Cl. B60s 3/06
U.S. Cl. 15—21 E 8 Claims



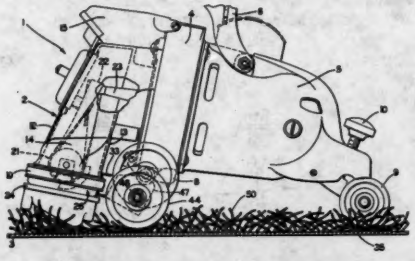
For use in a car or automobile washing unit in the operation of which the washing unit surrounds the automobile and moves along a prescribed path, thereby associating the automobile with various apparatus contained on the washing unit for cleaning different parts of the automobile, a side window washer including at least one brush centrifugally mounted on a pivotable overhead support which yieldably extends into the automobile during its path of movement so that the brush, during a cleaning interval, makes cleaning contact with the automobile and, more particularly, as the washer moves past the automobile, the angular orientation of the brush is such that the brush has a wiping stroke diagonally across the automobile side window so that the successive portions of the window coming into contact with the brush are in complete contacting relation therewith, and a front, side panel, fender and rear body washer including at least one brush rotatingly held in a support frame pivotally mounted on an overhead support which is itself pivotable in dual cross-direction so that the brush is continuously moving in a plane vertical to the automobile and has a wiping stroke adjustable to the shape and dimensions of the automobile.

3,689,955
WINDOW WIPER SYSTEM
Herbert E. Winkelmann, Kettering, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed May 12, 1971, Ser. No. 142,521
Int. Cl. B60s 1/10; F01l 15/00
U.S. Cl. 15—250.3 3 Claims



In a preferred form, this disclosure relates to a window wiper system for wiping a window of an automotive vehicle. The window wiper system includes a fluid motor having a cylinder and a piston reciprocable therein and which divides the cylinder into a first and second chambers; a wiper supported for movement in an oscillatory manner across the window, a drive transmission for oscillating the wiper in response to reciprocation of the piston; and a valve means which controls the operation of the fluid motor. The valve means includes a housing which defines a valve chamber and has apertures communicating the valve chamber with the atmosphere, a fluid pressure source, and the first and second chambers of the fluid motor. The valve means has a valve member which is shiftable between first and second positions to alternately communicate the atmosphere and the fluid pressure source to the first and second chambers of the fluid motor to effect reciprocation of the piston. The valve member is shiftable between its first and second positions by a valve actuator which comprises a Y-shaped actuator and a bowed leaf spring. The Y-shaped actuator is supported for pivotal movement and is engageable with the valve member. The bowed leaf spring effects rapid pivotal movement of the Y-shaped actuator when it is moved over center in response to reciprocation of the piston by a cam connected to the drive transmission.

3,689,956
SUCTION CLEANER SHAG RUG NOZZLE CONVERTOR
Robert V. Melrelt, Gates Hills, Ohio, assignor to Royal Appliance Manufacturing Co., Inc., Highland Height, Ohio
Filed April 5, 1971, Ser. No. 131,117
Int. Cl. A47l 9/02
U.S. Cl. 15—397 17 Claims



A shag rug cleaning nozzle convertor for a usual main suction cleaner nozzle connected to a usual source of cleaning

suction. The convertor comprises a wheeled carriage detachably mounted on the main nozzle having a plurality of subnozzles extending transversely beneath and communicating with the main nozzle, raising the main nozzle to a position spaced above the backing of a deep pile shag rug being cleaned. The subnozzles each are provided with a sloped bottom wall and rounded, tapered, streamlined sidewalls formed with an elongated opening extending rearwardly downwardly toward the rug backing and into the shag pile threads. The sloped bottoms prevent the pile from sealing the subnozzle openings and allow air to circulate through the shag pile threads and along the upper backing surface for removal of dirt. The wheeled carriage enables the main nozzle and subnozzles to be moved back and forth easily and freely through the shag rug for cleaning and the subnozzles comb the rug threads or fibers to prevent a neat cleaned appearance.

3,689,957

DRAPERY HOOK

Rina M. Pizzurro, 3009 Arlmont Dr., Bel-Nor, Mo.

Filed Sept. 29, 1969, Ser. No. 861,621
Int. Cl. A47h *13/04*
U.S. Cl. 16—87.2 **10 Claims**

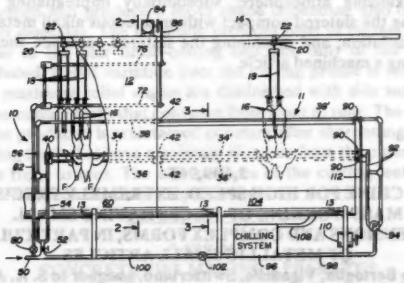
Drapery hooks having safety means for hooking them on drapery rods or sliders of traverse rods in such manner as to preclude accidental disengagement of the hooks therefrom. In one form this is accomplished by a double loop arrangement; in another form by a finger and loop arrangement; and in still another form by a snap fastener which in some cases also comprises a double loop. In all forms the drapery hooks include one or more prongs for insertion or engagement into drapes or curtains near the upper margin thereof.

3,689,958

FOWL PROCESSING SYSTEM

Janus J. Dillon, Irving, Tex., assignor to Food Equipment, Inc., Dallas, Tex.

Filed Dec. 11, 1970, Ser. No. 97,091
Int. Cl. A22c *21/00*, *21/04*
U.S. Cl. 17—11 **2 Claims**



The specification discloses a system for cleaning and chilling fowl carcasses and also for cleaning the fowl conveying shackles. The system includes a housing through which shackles are transported. Lower spray discharge nozzles are mounted in the housing for selectively applying a cleaning fluid and then a chilling fluid to the fowl carcasses carried by the shackles. Upper spray discharge nozzles are also mounted in the housing for selectively applying pressurized cleaning fluid to the shackles.

3,689,959

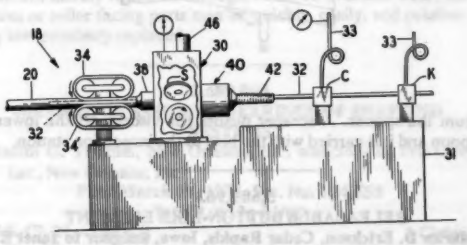
Patent Not Issued For This Number

3,689,960

METHOD AND APPARATUS FOR SHIRRING DELICATE AND FRAGILE FOOD CASINGS

Algimantas Povilas Urbutis, Chicago, Ill., assignor to Union Carbide Corporation

Continuation of Ser. No. 797,423, Feb. 7, 1969, abandoned. This application Feb. 19, 1971, Ser. No. 117,070
Int. Cl. A22c *13/00*
U.S. Cl. 17—51 **11 Claims**



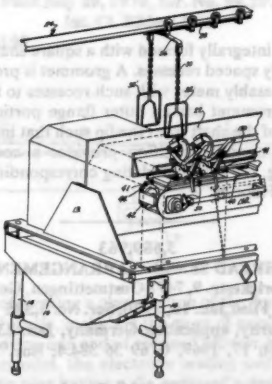
Continuous lengths of delicate and fragile food casings can be obtained by providing an increased pressure differential between the interior and exterior of inflated lengths of the food casings as they are being shirred.

3,689,961

METHOD AND APPARATUS FOR EVISCERATING POULTRY

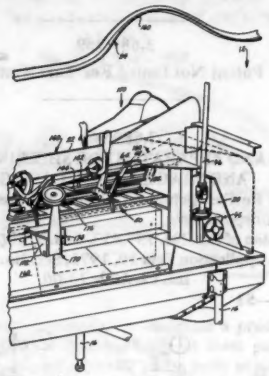
Edward J. Crane, Ottumwa, Iowa, assignor to International Agri-Systems, Inc., Madison, Ottumwa, Iowa

Continuation-in-part of Ser. No. 9,180, Feb. 6, 1970, abandoned. This application Feb. 8, 1971, Ser. No. 113,276
Int. Cl. A22c *21/06*
U.S. Cl. 17—45 **16 Claims**



An eviscerating apparatus utilizing two opposed spoon members adapted for insertion into the body cavity of the bird to be eviscerated. The spoons are separately pivotally mounted for rotation in a vertical plane upon a carriage attached to a conveyor. Cam followers on the spoon members and associated cam tracks cause the spoons to separate, to

remove the viscera from the bird and then partially close to permit an overhead carrier to lift the now eviscerated fowl



from the spoons. A scraper pushes the viscera off the lower spoon and it is carried with the bird to the inspection station.

3,689,962

RELEASABLE BUTTON-LIKE ELEMENT

Marlin D. Erickson, Cedar Rapids, Iowa, assignor to Janet E. Erikson, Hiawatha, Iowa, a part interest

Filed Oct. 19, 1970, Ser. No. 81,810

Int. Cl. A44b *1/38*

U.S. Cl. 24—108 **6 Claims**

A button is integrally formed with a square shaft having one or more axially spaced recesses. A grommet is provided with a lip which releasably mates with such recesses to form a fabric clamp. The grommet has an outer flange portion which extends axially of the shaft from the lip such that insertion in the diametrically opposite position provides a completely different spacing, for accommodating correspondingly different thicknesses of fabrics.

3,689,963

THREAD SENSING ARRANGEMENT

Karl Frei, Morickestr. 9, 7477 Onstmettingen, Germany

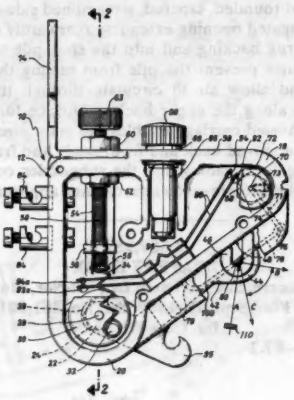
Filed Jan. 16, 1970, Ser. No. 3,385

Claims priority, application Germany, Jan. 23, 1969, P 19 03 195.9; Sept. 17, 1969, G 69 36 384.4; Nov. 7, 1969, G 69 43 236.6

Int. Cl. D04b *35/14*

U.S. Cl. 28—1 R **20 Claims**

A thread sensing arrangement for controlling the stop motion of a textile machine has a sensing means which turns about an axis located on an imaginary straight line through the path of the thread, and extending substantially in the direction in which the thread is supplied to the path which is formed by a pair of guide means mounted for angular movement about an other axis located on an other imaginary



straight line through the path which defines an acute angle with the direction in which the thread is supplied to the guide means.

ERRATA

For Classes 29—157 R and 29—157.3 R see:
Patents Nos. 3,689,940 and 3,689,941

3,689,964

MACHINING SINTERED POWDER METAL

Orville W. Reen, Lower Burrell, Pa., assignor to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Filed Feb. 25, 1971, Ser. No. 119,038

Int. Cl. B22f *3/24*

U.S. Cl. 29—420.5 **6 Claims**

A method of providing a machined powder metal article, which comprises the steps of: pressing metal powder into a green compact; sintering the green compact in a substantially non-oxidizing atmosphere; substantially impregnating and coating the sintered compact with an aqueous alkali metal silicate solution; and machining the sintered compact, thereby forming a machined article.

3,689,965

MACHINE FOR HIGH SPEED, EXTREMELY PRECISE MASS WORKING OF PIECES HAVING SMALL DIMENSIONS AND COMPLEX FORMS, IN PARTICULAR OF METALLIC SMALL ARTICLES

Guido Bertoglio, Viganello, Switzerland, assignor to S. A. Albe, Agno, Switzerland

Filed July 31, 1970, Ser. No. 59,908

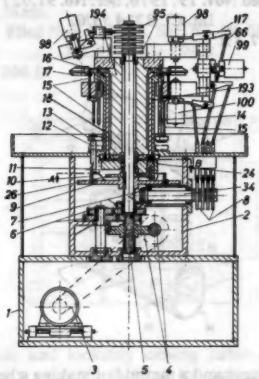
Claims priority, application Switzerland, April 10, 1970, 5406/70

Int. Cl. B23b *39/20, 39/22*

U.S. Cl. 29—38 C **19 Claims**

Small metallic workpieces are subjected to a sequence of

work operations at a surrounding series of work stations, by mounting them on a rotary carrier that rotates intermittently



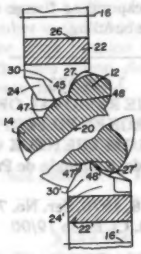
through predetermined equal angular increments successively to dispose each workpiece at each work station.

3,689,966

ROTARY CUTTER WITH HELICALLY DIRECTED CUTTING TEETH ARRANGED IN A CIRCLE

Ernest Wildhaber, 124 Summit Dr., Brighton, N.Y.

Filed June 8, 1970, Ser. No. 44,089
Int. Cl. B26d *1/12*
U.S. Cl. 29—103 C **6 Claims**



Cutters of the type referred to have cutting teeth inclined to the peripheral direction and arranged in a circle about the cutter axis. They require large amounts of relief for cutting clearance and produce a tooth shape depending also on the cutter diameter. The invention provides pairs of cutters, each cutter of the pair finish-cutting one side only of the teeth produced. Relief variation over the cutting profile is reduced and maximum relief angles are diminished with side surfaces of the cutting teeth that converge from front to rear. The tooth shape produced is maintained constant after sharpening, with cutting teeth that have a constant distance from the cutter axis from front to rear. The side surfaces of the cutting teeth are helical surface coaxial with the cutter.

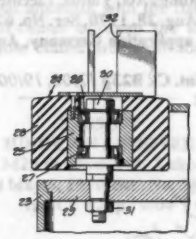
3,689,967

CONCRETE PIPE MAKING APPARATUS

William Hurst, P.O. Box 239, Santa Barbara County, Calif.

Filed June 5, 1970, Ser. No. 43,687
Int. Cl. B21b *13/02*
U.S. Cl. 29—116 R **1 Claim**

Each of the rollers in the packer head of concrete pipe making apparatus has rubber tires or rubber facings on their peripheral surfaces, which are brought into bearing contact with the concrete of a forming pipe. The tires or facings have a sufficient amount of resiliency so that stones, or the like, do not jam between the roller and adjacent packer head parts,



but are merely rolled on through. Also, on eventual wear, the tires or roller facing parts may be quickly, easily, and relatively inexpensively replaced.

3,689,968

METHOD OF ALIGNING BEARINGS OF SHAFTING SYSTEMS

Ruffin G. Truxillo, New Orleans, La., assignors to Tru-Line, Inc., New Orleans, La.

Filed March 15, 1971, Ser. No. 124,555
Int. Cl. B23p *11/00*
U.S. Cl. 27—149.5 R **2 Claims**

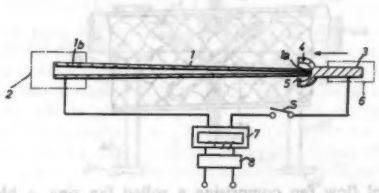
Bearing support sleeves or bearings are aligned by any well known procedures and held by temporary holding means in their respective permanent support fittings fixed to a basic structure, said support fittings having annular openings large enough to easily receive the sleeves or bearings therein with annular space left therebetween. The annular space is then filled with a high strength casting material that is allowed to setup before the holding means are removed or left severed in place to leave the support sleeves or bearings permanently aligned and fixed in place relative to each other.

3,689,969

METHOD OF FORMING A CLAW PORTION OF THE FRONT WHEEL JOURNAL FORK OF A BICYCLE

Masashi Tsunoda, Aichi-ken, Japan, assignor to Tsunoda Jitensha Kabushiki, Aichi-ken, Japan

Filed July 29, 1970, Ser. No. 59,297
Int. Cl. B23p *13/00*
U.S. Cl. 29—150 **8 Claims**



A method of forming a claw portion of the front wheel journal fork of a bicycle, including the steps of axially squeezing a metal pipe, having one end of reduced section, between a pair of chuck electrodes, the electrode seating said reduced section end of the pipe having a die cavity of a desired shape for an intermediate form of the claw portion, while simultaneously applying an electric potential to said electrodes, whereby to soften and form said reduced section end of the pipe to a shape conforming to that of the die cavity, pressing said shaped end of the pipe to flatten said end, shearing said flattened end to a desired claw contour, and punching a hole and a slot in said flat and contoured claw portion.

3,689,970

METHOD AND DEVICE FOR MAKING UP METAL BANDS INTO HOLLOW RAILS

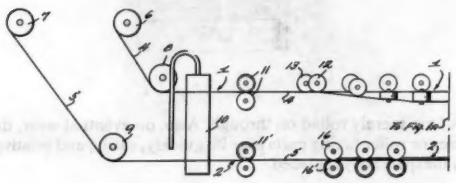
Raimund Falkner, Roppen/Tirol, Austria, assignor to Rapena Patent & Verwaltungs AG, Vaduz, Liechtenstein

Filed Aug. 28, 1970, Ser. No. 67,801

Claims priority, application Germany, Aug. 28, 1969, P 19 43 826.7

Int. Cl. B23p *17/00, 19/00*

U.S. Cl. 29—155 R 21 Claims



Apparatus and method for making at least two metal bands into a hollow rail, e.g. for door and window frames, wherein the bands are simultaneously drawn by a tractive force acting from the formed end, e.g. by a power-operated reciprocal clamp, through non-driven roll-type forming tools which shape the bands into profiles while under the tractive force so that the bands are strengthened and straightened in at least some longitudinal zones. While being drawn through the forming tools a non-metallic elastic shim liner is fed and applied to the edges of at least one of the bands and after both bands have been profiled, they are pressed together, by appropriate guiding and shaping tools, whereby the longitudinal edges of the bands are connected together by a folded welt that completely encloses the shim liner while the latter prevents friction metallic contact between the two bands.

3,689,971

AXIAL FLOW FANS

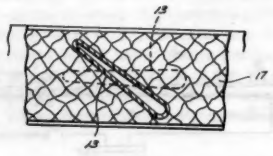
Eugene M. Davidson, P.O. Box 36100, Houston, Tex.

Division of Ser. No. 852,140, July 3, 1969, Pat. No. 3,588,271.

This application July 29, 1970, Ser. No. 64,839

Int. Cl. B23p *15/02, 15/04;* B21k *3/04*

U.S. Cl. 29—156.8 CF 3 Claims



An axial flow fan comprising a rolled fan ring, a blade rotatably mounted within the fan ring, and a lining of metal foil honeycomb about the inner periphery of the ring with the openings therethrough extending radially of the ring. At least a portion of the inner surface of the lining is crushed to provide a substantially uniform clearance about the tip of the blade. The honeycomb is constructed of sheets of the metal foil which are bent and joined together at spaced apart locations by an adhesive. A layer of the honeycomb is first annealed and then installed in the ring. Annealing renders the honeycomb soft and substantially destroys the bond so that the lining may be crushed to only a fraction of its original thickness.

3,689,972

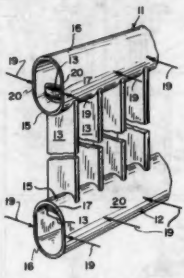
METHOD OF FABRICATING A HEAT EXCHANGER

James A. Mosier, and Harold H. Dolister, both of Racine, Wis., Assignors to Modine Manufacturing Company

Filed Nov. 19, 1970, Ser. No. 91,027

Int. Cl. B21d *53/02*

U.S. Cl. 29—157.3 R 7 Claims



A heat exchanger and a method of making a heat exchanger comprising an elongated integral metal tank-header with spaced tubes interfitted in openings formed by displacing metal of the header portion to form flanges. The flanges are bonded to the tube ends and the tank-header before and after the bonding has a curved cross section including the flange areas. The method of forming the heat exchanger in which an integral metal tank-header is provided of rounded externally convex cross section including a longitudinal portion comprising an elongated convex header, providing spaced openings in this header each defined by a flange of metal displaced from the header in forming the opening and each flange having a curved bonding surface bonding the end of the tube in each opening with bonding material located between the tubes and the surface on the corresponding flange and then reshaping the tank-header after the bonding.

3,689,973

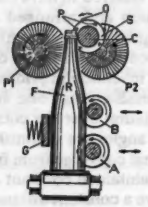
APPARATUS FOR THE REMOVAL OF UNBROKEN OR INSUFFICIENTLY BROKEN PILFERPROOF RINGS OF SCREW-CAPS FROM THE NECK OF BOTTLES

Joseph Jacques Leenaards, 6 Chomin de Primerose, Lausanne, Switzerland

Filed Oct. 8, 1970, Ser. No. 79,075

Int. Cl. B23p *19/00*

U.S. Cl. 29—200 D 7 Claims



This invention relates to an apparatus and a process for removing unbroken or insufficiently broken pilferproof rings of screw-caps from the bottle-necks.

Therefor a bottle is applied and pressed during its transport against a guide which can give way in cross-direction. This bottle is treated by one or more protrusions displaced from the bottle-top downwards mainly in a plane through the centerline of the bottle.

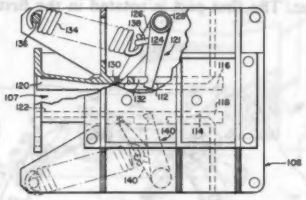
Thanks said protrusions, the pilferproof ring remaining on the bottle-neck is pushed downwards and is broken in order to be removed from said bottle-neck.

3,689,974

CABLE CLAMP AND APPARATUSES FOR ATTACHING AND FOR DETACHING THE CLAMP

William D. Whipple, and Howard W. Gifford, both of Westport Point, Mass., assignors to Prelude Corporation, Westport Point, Mass.

Filed Nov. 2, 1970, Ser. No. 86,088
Int. Cl. B23p 19/04
U.S. Cl. 29—200 D 13 Claims



A releasable and lockably closing cable clamp has two clamp elements movable relative to each other between a release position and a cable-clamping closed position, and has a latch member movable between an unlatch position where the clamp elements are free for said relative movement and a latch position where it locks the clamp elements in the closed position.

An attacher of the clamp to a moving cable has a carriage for moving a clamp with the cable into engagement with a clamp-closing cam that closes the clamp onto the moving cable, and into engagement with a clamp-locking cam that moves the clamp latch element to the latch position.

A detacher for releasing the clamp from a moving cable has an aligner that selectively orients the cable-carried clamp and feeds it to a guide passage. A follower engages the clamp in this passage and is moved by the advancing clamp to move a latch-releasing member to shift the latch member on the moving clamp from the latch position to the unlatch position, thereby allowing the two clamp elements to separate from each other and release the cable.

3,689,975

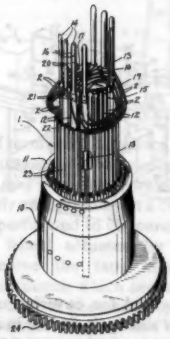
Patent Not Issued For This Number

3,689,976

COIL TRANSFER APPARATUS

Glenn R. Donovan, Kettering, Ohio, assignor to A. O. Smith Corporation, Milwaukee, Wis.

Filed April 15, 1971, Ser. No. 134,182
Int. Cl. H02k 15/06
U.S. Cl. 29—205 D 5 Claims



Prewound coils are placed into stator slots of a dynamoelectric machine by an insertion apparatus which has a plurality of fixed blades arranged in a circle within the inside diameter of the stator. The blades are spaced to provide blade gaps corresponding in position to the stator slots, and a piston driven stripper operating within the circle of blades inserts the coils through the gaps and into the stator slots. The stripper carries movable blades that alternate with the fixed blades, and the blade gaps are off-center between the movable and fixed blades. The movable blades are removably attached to the stripper.

3,689,977

HINGE PIN REMOVER

Harlis G. Crabbe, 3422 Sandwood St., Lakewood, Calif.

Filed May 6, 1970, Ser. No. 35,037
Int. Cl. B25p 19/04
U.S. Cl. 29—253 2 Claims

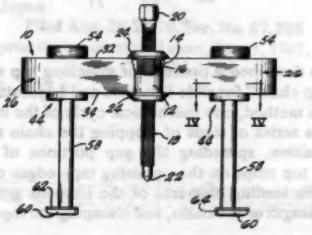
This invention relates to an effective means of removing the hinge pin, particularly of a plate type hinge, when it is necessary to remove the hinge pin in order that the door may be removed from its mounting. My hinge pin removing tool provides a sturdy driver type device which can be struck with a hammer in order to drive the hinge pin out of its socket, particularly when the hinge pin is rusted or has been painted while in place.

3,689,978

WHEEL OR GEAR PULLER

Robert E. Kelso, Jackson, Mich., assignor to Dowley Manufacturing, Inc., Spring Arbor, Mich.

Filed Nov. 26, 1969, Ser. No. 880,153
Int. Cl. B23p 19/04
U.S. Cl. 29—259 2 Claims



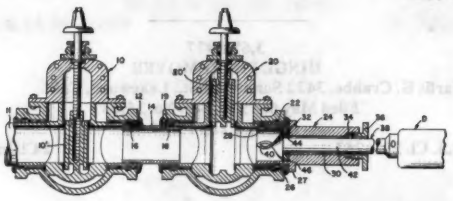
A tool of the wheel or gear puller type including a hub having a threaded jack shaft supported therein, and yoke arms radially extending from the hub. The yoke arms each consist of a pair of spaced, parallel portions having parallel lateral edges whereby the portions define a slot-like recess receiving hangers upon which pulling implements are mounted. The hangers are radially adjustable within the associated yoke arm and fastening means are defined on the hangers for fixing the radial position of each hanger with respect to the hub.

3,689,979

APPARATUS AND METHOD FOR REPLACING A DEFECTIVE GATE VALVE

William Palat, 166-25 12th Ave., Whitestone, N.Y.

Filed Aug. 19, 1970, Ser. No. 65,039
Int. Cl. B23p 7/00, 19/04
U.S. Cl. 29—401 7 Claims



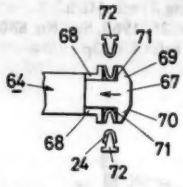
A special cutting tool such as a drill is concentrically disposed within a sleeve having external threads at one end. The sleeve is threadably coupled to the downstream end of a new gate valve while the upstream end of the new gate valve is coupled by means of a nipple or the like to the downstream end of an old gate valve that is either stuck, broken or frozen in the closed position and which cannot be moved. With the gate of the new valve in the open position, the drill is axially extended and rotated to remove the gate of the old valve. The drill is then axially withdrawn and the new valve is closed. The sleeve is then unthreaded from the new valve and the pipe line is coupled to the new valve in a conventional manner.

3,689,980

METHOD AND APPARATUS FOR AUTOMATICALLY AFFIXING TOP STOPS ON SLIDER FASTENER CHAIN

Yoshio Oyama, 111, Tomari, Asahi-cho, Shimonikawa-gun, Toyama-ken, Japan

Filed Nov. 4, 1970, Ser. No. 86,663
Claims priority, application Japan, Nov. 12, 1969, 44/90574
Int. Cl. B23p 19/04, 11/00
U.S. Cl. 29—408 9 Claims



There is described a process for attaching top stops on so-called "gap chain" for slide fasteners and apparatus for carrying out the method, one mechanical cycle of the method consisting of a series of steps of stopping the chain at predetermined position, spreading the gap portions of the chain, delivering top stops on the opposing tape edges of the chain close to the leading elements of the element groups spaced along the length of the chain, and clamping the top stops.

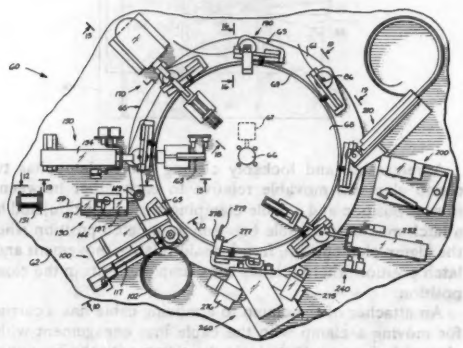
3,689,981

METHODS OF ASSEMBLING ELECTRICAL COMPONENTS

Thomas Alvin La Valle, Annapolis, Md., assignor to Western Electric Company, Incorporated, New York, N.Y.

Division of Ser. No. 878,017, Nov. 19, 1969, Pat. No. 3,618,204. This application Aug. 13, 1971, Ser. No. 171,439
Int. Cl. B23p 19/00; H05k 13/00; H01f 7/06
U.S. Cl. 29—430 2 Claims

A rotatable turntable having a plurality of workholders spaced about the periphery thereof is indexed to advance each of the workholders successively through each of a plurality of work stations positioned adjacent the periphery of the turntable to assemble electrical components. A first part positioned in one of the workholders has the leading end of an insulated wire extending from a supply of wire welded thereto, after which the first part is indexed to another work station without severing the wire extending from the first part to the supply. A portion of the wire extending to the first part in the workholder is severed from the supply and the new leading end of the wire is attached to the first part in the next succeeding workholder. The first part is rotated in the first workholder



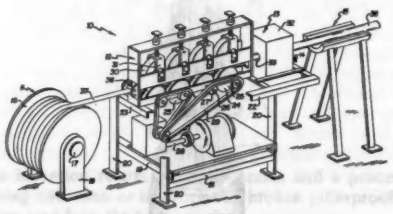
while tensioning the wire extending from and secured to the first part to wind the wire thereon as the workholder is advanced with the turntable. Facilities are provided for orienting the workholders prior to the winding of the wire on the first parts. Subsequently, a second part is assembled to the first part and, simultaneously, the insulation on a portion of the wire extending from the first part is stripped, whereafter the trailing portion of the wire is welded to a metal cap which is secured to the second part, the strength of the weld is tested, and the electrical component is advanced to a last work station, tested electrically, and then sorted.

3,689,982

APPARATUS AND METHOD FOR CABLE COVERING

Ian Wallace Campbell, 2750 Tudor Ave., Victoria, British Columbia, Canada

Filed Oct. 27, 1970, Ser. No. 84,352
Int. Cl. B23p 19/00, 19/04
U.S. Cl. 29—430 6 Claims



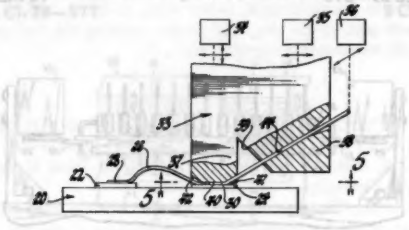
Apparatus and method for covering cables with flexible thin-walled tubing for sliding fit, for use in such applications as pre-tensioning or post-tensioning concrete installations. The cable is coated with lubricant, and fed into a length of extended tubing from a nozzle to which the tubing is secured.

3,689,983

METHOD OF BONDING

Richard E. Eltzroth, and Larry K. Fewell, both of Kokomo, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed May 11, 1970, Ser. No. 36,323
Int. Cl. B23k 21/00
U.S. Cl. 29—470.1 2 Claims



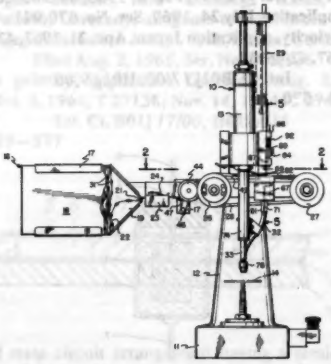
A bonding tip and method is disclosed for making an extremely strong tailless wire bond on a contact pad of a semiconductor device without significantly reducing the connected unbonded wire cross-section immediately adjacent the bond. One form of the tool includes an elongated member having a flat bonding surface on one end and a pair of oppositely disposed grooves which intersect opposite edges of said bonding surface. The connected unbonded wire adjacent a final bond of an interconnection is aligned with one of the grooves and separated from the bonded portion while the tip is in pressing engagement therewith by pulling thereby removing a preselected part of the bond under a groove producing a tailless bond.

3,689,984

AIR OPERATED TERMINAL FEED DEVICE

Stuart J. Biederman, Floral Park, and Walter E. Jezewski, Tuckahoe, both of N.Y.

Filed March 24, 1970, Ser. No. 22,352
Int. Cl. H05k 13/04; B23q 7/10
U.S. Cl. 29—203 B 5 Claims



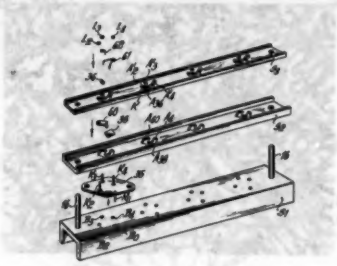
An air operated terminal feed device, for use with an insertion machine, to transport prefabricated terminals into position for insertion in a workpiece, which includes a supply of terminals separately encapsulated in a continuous supply tape. The tape may be perforated to cooperate with sprockets on a cylindrical drive wheel actuated by a pawl and ratchet mechanism, to move the tape incrementally toward a reciprocating die or punch which separates the encapsulated terminals from the tape. A pneumatic cylinder is provided as a power source to actuate the pawl and ratchet mechanism. A take-up wheel, which is operably connected to the drive wheel and upon which the perforated tape is wound, may be provided as an aid in maintaining proper tension in the tape.

3,689,985

METHOD OF MAKING A SEMICONDUCTOR UNIT

Johannes Nier, Stuttgart, Germany, assignor to Robert Bosch GMBH, Stuttgart, Germany

Division of Ser. No. 16,303, March 4, 1970, abandoned. This application July 15, 1971, Ser. No. 162,965
Claims priority, application Germany, March 8, 1969, P 19 11 915.4
Int. Cl. B23k 31/02
U.S. Cl. 29—471.3 7 Claims



A method of making a semiconductor element. A first semiconductor body has a pair of first major surfaces on opposite sides. A first contact is provided on and covers one of the first surfaces. A socket plate is conductively connected to the other of the first surfaces and has a first contact pin. A second semiconductor body has a pair of second major surfaces and a second contact provided on and covering one of these second major surfaces. A carrier is connected with the socket plate and the second semiconductor body and located between the two. A second contact pin is provided on the second body at a side thereof facing away from the carrier and a third contact pin is provided, both the second and third contact pins penetrating the socket in insulated relationship. A connecting wire has a straight first end portion conductively secured to the second contact pin, a helically convoluted second portion conductively secured to the third contact pin, and a center portion with respect to which each of the end portions extends at an angle. An additional contact pin is provided on the first semiconductor body at a side thereof facing away from the socket plate and is in direct electrically conductive engagement with the carrier.

3,689,986

METHOD OF CASTING COMPOSITE CAM SHAFTS

Kentaro Takahashi, Ohmiya, and Yoshihito Sato, Kawaguchi, both of Japan, assignors to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Filed Aug. 26, 1970, Ser. No. 67,285
Claims priority, application Japan, Apr. 1, 1967, 42/20820
Int. Cl. B22d 31/00
U.S. Cl. 29—527.6 4 Claims

A method of casting a cam shaft with an axial oil passage comprising inserting a core rod into a steel pipe in closely fitted relation, coating the solid core on its outer periphery with a releasing agent of low thermal conductivity, placing the core and pipe assembly in a mould with the solid core aligned with the axis of a cam shaft to be formed, and pouring molten metal around the core assembly in the mould. Thereafter, upon completion of the casting, the solid core is withdrawn from the pipe to thereby form the aligned oil passage, within the cam shaft.

3,689,987

METHOD OF MAKING METAL ARTICLES

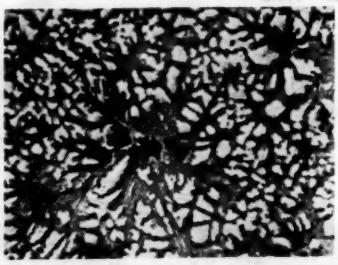
Ernest Douglas Teague, Welwyn Garden City, England, assignor to Johnson, Matthey & Co. Limited

Filed April 7, 1969, Ser. No. 822,815

Claims priority, application Great Britain, April 5, 1968, 16,639/68

Int. Cl. B44d 1/08

U.S. Cl. 29—527.2 15 Claims



This invention is concerned with the provision of an improved method of making metal articles in which the metal is prepared in a form suitable for spraying and is then sprayed on to a target in such a way that most of the droplets of the spray can be individually identified after the sprayed metal has solidified. In other words the spraying is carried out under such conditions that the majority of the droplets retain their identity.

3,689,988

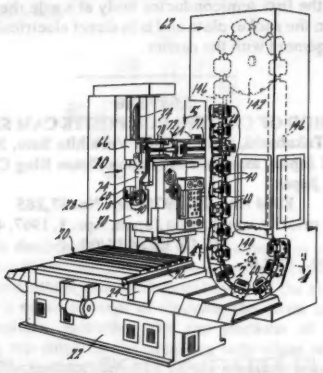
MACHINE TOOL WITH AUTOMATIC TOOL CHANGING MECHANISM

Richard A. Jerue, Birmingham, Mich., assignor to Devlieg Machine Company, Royal Oak, Mich.

Filed April 22, 1970, Ser. No. 30,630

Int. Cl. B23q 3/157

U.S. Cl. 29—568 13 Claims



An automatic tool changing machine tool in which tools are selected from a tool storage device and transported to a position adjacent the drive spindle of the machine. From this position, a selected tool is inserted automatically in the drive spindle of the machine when it is ready to be used. The tools are coupled to pallets or carriers having handles which are engaged by various tool gripping elements in transporting the tool from the storage device to the spindle. The carriers also serve to mount coding for identifying the tool and conveying certain dimensional characteristics of the tool. Each carrier remains with its tool at all times and is only rotationally uncoupled from its tool after the tool has been inserted in the drive spindle.

3,689,989

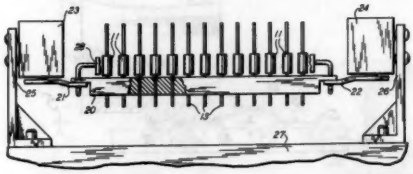
PROCESS OF ASSEMBLING SOLID ELECTROLYTIC CAPACITORS USING VIBRATION STEP WITH BOTH LOW AND HIGH FREQUENCY COMPONENTS

Grady L. McClamrock, Mocksville, N.C., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Oct. 2, 1970, Ser. No. 77,488

Int. Cl. B01j 17/00; H01g 13/00

U.S. Cl. 29—570 12 Claims



A solder preform slug and a processed anode are placed into a can. A glass end seal and an outer solder preform O-ring are placed on a lead extending from the anode. The assembled components are heated to the melting temperature of the solder preforms. The can is vibrated by applying high frequency vibrations to a bar supporting the can. The bar has a natural low frequency of vibration such that both the high frequency vibrations and the low frequency vibrations are applied to the can. The low frequency vibrations settle the anode into the can and release gases which are produced from rosin. The high frequency components produce rotation of the can which aids in the sealing of the end seal by the solder preform O-rings.

3,689,990

METHOD OF MAKING AN ELECTRICAL CAPACITOR

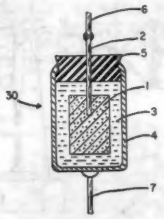
Koreaki Nakata, 20 Ohata-cho, Nishinomiya-shi, Hyogo-ken, and Yoshio Iida, 11-3 4-chome Fujishirodai, Suita-shi, Osaka-fu, both of Japan

Division of Ser. No. 704,057, Feb. 8, 1968, abandoned. This application July 24, 1969, Ser. No. 870,941

Claims priority, application Japan, Apr. 21, 1967, 42/25937; July 19, 1967, 42/46934

Int. Cl. B01j 17/00; H01g 9/00

U.S. Cl. 29—570 4 Claims



An electrical capacitor according to the invention comprises a pair of electrodes and an electrically conductive material in contact therewith, at least one of the electrodes being of titanium-zirconium alloy, the electrode having an anodic dielectric oxide film thereon. The Ti-Zr electrode preferably comprises 40–90 atomic percent of Ti and 10–60 percent of Zr, and has a sintered porous structure. In one form, the electrically conductive material is MnO_2; in another form, it is an aqueous solution of phosphoric acid, sulfuric acid, ammonium borate or potassium nitrite. A method of manufacture is also disclosed.

3,689,991

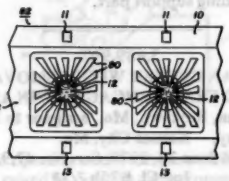
METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE UTILIZING A FLEXIBLE CARRIER

Alanson D. Aird, North Syracuse, N.Y., assignor to General Electric Company

Continuation of Ser. No. 709,651, March 1, 1968, abandoned. This application March 6, 1970, Ser. No. 17,012

Int. Cl. B01g 17/00; H01l 7/00

U.S. Cl. 29—577 8 Claims



Semiconductor devices such as transistors are manufactured by use of a longitudinally extending tape-like carrier including a metallic layer secured to a flexible insulative layer, with the insulative layer having centrally located longitudinally spaced apertures. These apertures are covered by the metallic layer and are dimensioned to encompass contact regions of a semiconductor body such as a transistor or monolithic integrated circuit pellet. Longitudinally spaced sets of finger-like leads are formed from the metallic layer with the inner portions of the leads of each set extending cantilever-wise within the periphery of a respective adjacent aperture for registry with the contact portions of a semiconductor pellet. The leads of each set are connected to the contacts of a pellet registered with the adjacent aperture, the respective pellets and portions of the leads connected thereto are encapsulated, and the carrier may be reeled or otherwise automatically handled, with individual devices obtainable by severance from the carrier.

3,689,992

PRODUCTION OF CIRCUIT DEVICE

Hans-Jurgen Schutze, and Hennings Klaus, both of Ulm/Danube, Germany, assignors to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm/Donau, Germany

Filed Aug. 2, 1965, Ser. No. 476,536

Claims priority, application Germany, Aug. 8, 1964, T 26759; Oct. 3, 1964, T 27136; Nov. 14, 1964, T 27418

Int. Cl. B01j 17/00; H01l 1/16

U.S. Cl. 29—577 13 Claims

A solid state circuit arrangement having a semiconductor member and presenting reduced shunt capacitances as the result of the isolation of various regions of the member from each other and a method for fabricating such arrangement by forming a subassembly of two members, constituted by a first insulating layer and the semiconductor member, by depositing one of the members on the surface of the other thereof, depositing a second insulating layer on the side of the semiconductor member which is opposite from the surface upon which the first layer bears, forming apertures in at least one of the insulating layers to expose surface portions of the semiconductor member, and etching out the portions of the semiconductor member in the region of each aperture to create cavities which extend from one of the insulating layers to the other.

3,689,993

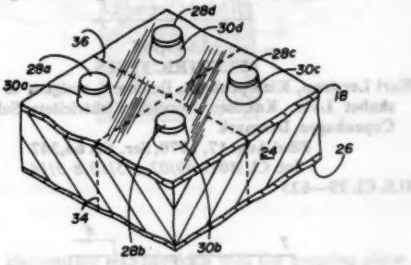
FABRICATION OF SEMICONDUCTOR DEVICES HAVING LOW THERMAL INPEDANCE BONDS TO HEAT SINKS

Neal Jay Tolar, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 855,639, Sept. 5, 1969, abandoned. This application July 26, 1971, Ser. No. 166,285

Int. Cl. B01j 17/00; H01l 7/66

U.S. Cl. 29—583 21 Claims



A layer of contact metallization is applied over the surface of a semiconductor slice having a P-N junction. A heat sink layer of high conductivity metal, such as copper, is applied over the contact metallization with a sufficient thickness to provide a predetermined heat dissipation for the P-N junction. A plurality of spaced apart discrete metal contacts are formed over the opposite surface of the semiconductor slice. Portions of the semiconductor slice are then removed between the metal contacts in order to form an array of discrete semiconductor devices, such as avalanche diodes, extending from the heat sink layer. The heat sink layer is then divided to provide a plurality of semiconductor devices attached to individual low thermal impedance heat sink members.

3,689,994

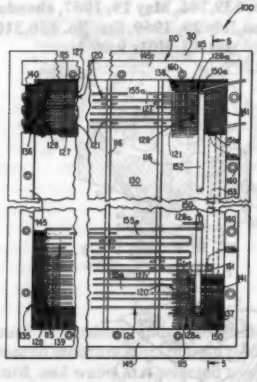
FILTER STRUCTURE AND METHOD OF MAKING THE SAME

Edgar S. Stoddard, 626 S. Columbia St., Naperville, Ill.

Division of Ser. No. 759,606, Sept. 13, 1968, Pat. No. 3,524,303. This application June 25, 1970, Ser. No. 49,775

Int. Cl. H05b 3/00

U.S. Cl. 29—611 6 Claims



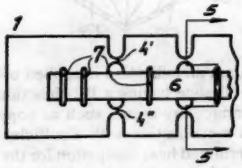
A method of continuously forming self-cleaning filter structures comprises the steps of continually withdrawing a plurality of laterally spaced-apart electrically insulating continuous warp fibers along a longitudinal path, continually interlacing an electrically insulating continuous woof fiber with the warp

fibers to form a fabric, continuously interlacing an electrically resistive continuous woof wire with the centrally disposed warp fibers in longitudinally spaced-apart areas in fabric to provide a plurality of longitudinally spaced-apart central areas each surrounded by an insulating border region, applying a rigidifying structure to the border regions completely to surround each central area, connecting a pair of electrical terminals to the portion of the woof wire disposed in each central area, and laterally severing the fabric and the woof wire in the laterally extending portions of the border regions to provide self-cleaning filter structures each including a filtering central area surrounded by a rigidified insulating border region.

3,689,995
ELECTRIC FUSES

Karl Lerstrup, Klampenborg, Denmark, assignor to Aktieselskabet Lour. Knudsen Nordisk Elektricitets Selskab, Copenhagen, Denmark

Filed Aug. 17, 1970, Ser. No. 64,347
Int. Cl. H01h *69/02,8 5/10,8 5/14*
U.S. Cl. 29—623 **1 Claim**

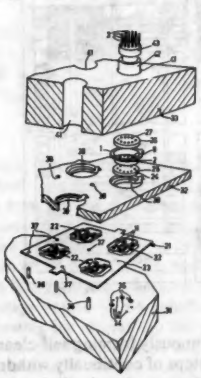


An electric fuse comprises a metal ribbon provided with indentations or openings to form zones of narrowed cross-section serving as fuse elements, the adjacent portions of the ribbon serving as heat sinks and cooling surfaces. According to the invention, one or more insulating stiffening members is/are attached to the ribbon to improve mechanical strength in the weakened zones without affecting arc formation. In a preferred method of manufacturing, the final formation of the fuse elements takes place after the stiffening member has been attached.

3,689,996
MANUFACTURING A PLURALITY OF SEMICONDUCTOR DEVICE HEADERS

Geoffrey William Scholes, Totton, and Anthony Ronald Jones, Thornhill, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 639,746, May 19, 1967, abandoned. This application July 29, 1969, Ser. No. 850,310
Int. Cl. H01r *9/00*
U.S. Cl. 29—630 R **5 Claims**

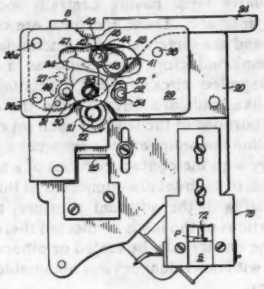


A plurality of semiconductor device headers are manufactured by sandwiching an apertured glass preform between an apertured metal shell and a single patterned metal foil with apertured web portions extending from a surrounding support part of the foil, placing a plurality of metal wires in a jig and through the metal shell, passing the glass preforms and at least one of the wires through the aperture in each of the web portions, locating a brazing ring on the wire adjacent the foil, and heating the jig with metal shell, glass preform, metal foil and wires therein to a temperature sufficient to fuse the glass preform to the metal shell, to the wires, to the metal foil, and the web part to the ring, and finally severing the web parts from the surrounding support part.

3,689,997
ELECTRIC CAN OPENER WITH REMOVABLE HAND LEVER AND FRAME ENGAGING PIN ASSEMBLY

Robert E. McLean, Raytown, Mo., assignor to Rival Manufacturing Company, Kansas City, Mo.

Filed June 22, 1970, Ser. No. 47,937
Int. Cl. B76b *7/38*
U.S. Cl. 30—4 R **11 Claims**



An electrically powered can opener has suitable components for initiating power-pierce and automatic shutoff. At the same time, the selective removal of the can opener cutter mounting plate which carries the cutter element thereon is provided for. The can opener frame is apertured to movably receive a hand lever assembly which includes the cutter mounting plate, the hand lever and an interposed plate and spring combination to assist in the operative movement of the cutter mounting plate. A spring biased lever is pivoted to a portion of the can opener frame and operates in accordance with the manual movement of the cutting element against the end of the can to initiate power-pierce and to maintain the can opener motor on until the end of the can has been sheared therefrom. At this time, the lever pivotally moves to automatically shut off the power to the can opener motor.

A spring biased push button operated latch engages a pin member extending from the hand lever assembly. It permits the removal of same (along with the cutting element carried on the cutter mounting plate) by manipulation of the push button latch structure.

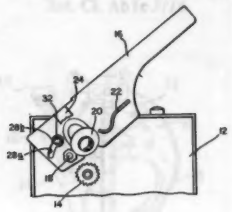
3,689,998
CAN OPENER HAVING REMOVABLE CUTTER ASSEMBLY

James H. Hahn, Fort Lauderdale, Fla., assignor to Scovill Manufacturing Company, Waterbury, Conn.

Filed Sept. 16, 1970, Ser. No. 72,620
Int. Cl. B67b *7/38*
U.S. Cl. 30—4 R **2 Claims**

A can opener is provided on its lever arm with an arcuate

keyhole-shaped slot and the housing has a headed pin passing through the slot, the head keeping the lever arm against the



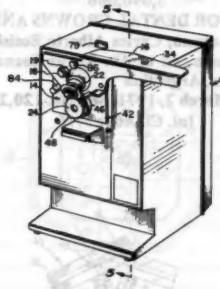
housing until the opening and wide part of the keyhole align when the arm is raised in non-use, whereupon the arm can be removed.

3,689,999

CAN OPENER

Roy L. Swanke, Newington; Bruno M. Valbona, Avon, and Maurice P. Samuelian, West Hartford, all of Conn., assignors to Dynamics Corporation of America, New York, N.Y.

Filed Nov. 3, 1970, Ser. No. 86,410
Int. Cl. B67b 7/38
U.S. Cl. 30—4 R **18 Claims**



An electrically powered can opener for use as a household appliance in which all of the working parts that may become contaminated with the contents of opened cans are removable for cleaning as a unit for sanitary and safety reasons without disturbing the carefully adjusted assembly of a unitary self-camming cutter and feed wheel. The drive of the feed wheel can also be quickly interrupted for safety reasons and automatically re-established for operation.

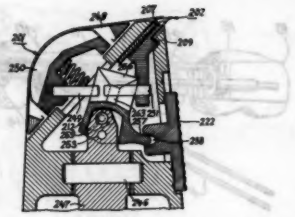
3,690,000

DRY SHAVE APPLIANCES

Aldo Loner, Klagenfurt, Carinthia, Austria, assignor to U. S. Phillips Corporation, New York, N.Y.

Filed June 8, 1970, Ser. No. 44,150
Claims priority, application Austria, June 10, 1969, A 5514/69
Int. Cl. B26b 19/00
U.S. Cl. 30—34.1 **8 Claims**

A dry shave appliance having a shaver part composed of at least one long hair cutting part with upper and lower cutters and a motor with a drive member. A coupling piece and an



operating element are also provided with the coupling piece displaceable by the operating element positionable in at least two working positions.

3,690,001

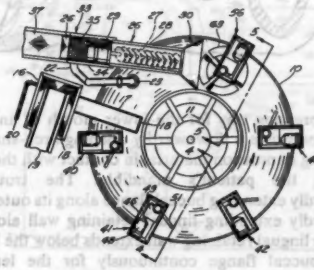
Patent Not Issued For This Number

3,690,002

METHOD AND APPARATUS FOR WASHING CHEESE CURD

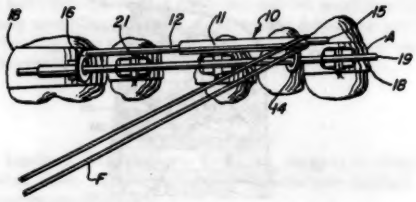
Charles D. Frederick, Western Springs, Ill.; Kenneth D. Dembny, Fort Atkinson, Wis., and Meredith C. Thomson, Oconomowoc, Wis., assignor to Swift & Company, Chicago, Ill., by said Frederick

Filed March 30, 1970, Ser. No. 23,828
Int. Cl. A01j 25/11; A23c 19/00
U.S. Cl. 31—89 **21 Claims**



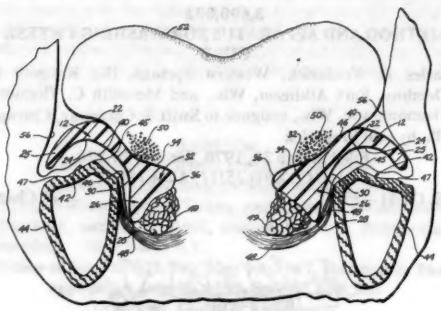
Cheese curd is washed under controlled conditions to produce a desired moisture level therein by continuously feeding milled curd, and water at a selected temperature between 60°–85° F., into a rotating annular vessel wherein the curd and water are agitated while being carried on a circular course. The curd and a portion of water are continuously discharged prior to being carried a full rotation of the vessel; and the rate of rotation of the vessel is adjustable to limit the time that the curd is carried therein.

3,690,003
ADJUSTABLE ORTHODONTIC YOKE
Warren E. Gerber, 370 Berkeley Ave., Winnetka, Ill.
Filed Aug. 26, 1971, Ser. No. 175,187
Int. Cl. A61c 7/00
U.S. Cl. 32—14 A 3 Claims



An adjustable orthodontic yoke for use with means for distally driving teeth and for stabilizing anchorage.

3,690,004
IMPRESSION TRAY AND METHOD FOR MAKING IMPRESSIONS
John P. Frush, 1650 Gardena Ave., Glendale, Calif.
Continuation-in-part of Ser. No. 80,269, Oct. 13, 1970, abandoned, which is a continuation-in-part of Ser. No. 15,652, March 2, 1970, abandoned. This application March 8, 1971, Ser. No. 121,754
Int. Cl. A61c 9/00
U.S. Cl. 32—17 17 Claims



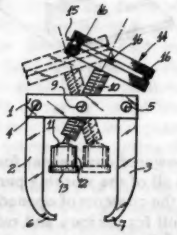
An impression tray for the lower mouth of an edentulous patient comprises a downwardly opening arch-shaped trough for holding impression material in contact with the gum tissue overlying the patient's mandible. The trough has a downwardly extending buccal flange along its outer side, and a downwardly extending lingual retaining wall along its inner side. The lingual retaining wall extends below the bottom edge of the buccal flange continuously for the length of the mylohyoid ridge in the patient's mandible to hold the floor of the mouth away from the mylohyoid ridge while the impression material covers the gum tissue overlying the ridge. A shelf spans the inside of the lingual retaining wall and projects inwardly toward the patient's tongue to support the tongue in an elevated position away from the mylohyoid ridge while the impression is taken.

A single cast impression of the entire lower mouth is made from a first impression material carried in the impression tray, and a second impression material of a different color disposed in the mucobuccal and mucolabial folds and merged with the first impression material.

3,690,005
TOOL FOR INSERTING DENTAL IMPLANTS
Alfred E. Edelman, 2723 Federal St., Camden, N.J.
Filed Nov. 24, 1970, Ser. No. 92,464
Int. Cl. A61c 3/00
U.S. Cl. 32—40 R 9 Claims

An elongated shank is provided in one end portion thereof with a socket for receiving the head portion of a wide vent dental implant so that the blade portion of the implant may be driven into the jaw by impacts delivered to the other end of the shank. The socket is provided with a notch for direct engagement with the blade portion of the implant in an alternative manner of use when the implant head portion is not in the socket. In place of impacting the shank directly, the shank may be separably attached to a socketed head on a laterally offset end portion of a handle which constitutes an extension for the shank.

3,690,006
EXTRACTOR FOR DENTAL CROWNS AND BRIDGES
Gustavo Jimenez Lozano; Carlos Alberto Bosisio, and Alejandro Sise Weinbaum, all of Av. Rogue Saenz Pena 760, of 719, Buenos Aires, Argentina
Filed March 2, 1971, Ser. No. 120,221
Int. Cl. A61c 3/16
U.S. Cl. 32—43 7 Claims



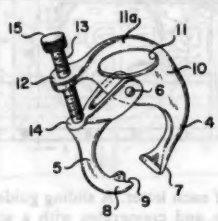
An extractor for dental crowns and bridges, of the type comprising an oblong mounting plate, to the ends of which are articulately connected two elongated arms, bearing on their free ends their corresponding claws, featured by the face that the central portion of said plate has an opening in which is oscillatingly located a nucleus, and through this goes a threaded stem that on its end adjacent to the claws, has connected in ball-joint, a support piece that on its free end bears a semirigid antiskid coating, while on its opposite end, it has a commanding disc with a knurled edge, where there is a peripheric groove from which, in angularly displaced positions, protrude towards the inside of the disc, several radial holes adapted to receive, alternately, the end of a removable fine stick, forming a pressing lever, which cooperates with the above-mentioned commanding disc.

3,690,007

DENTAL CROWN AND BRIDGE REMOVING ADAPTOR

Lyda Darrell Curtis, Wheeling, W. Va., assignor to S. Arthur Rybeck, Jr., Wheeling, W. Va.

Filed Aug. 13, 1971, Ser. No. 171,598
Int. Cl. Ab1c *3/16*
U.S. Cl. 32—43 5 Claims



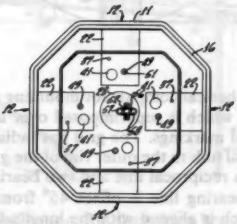
A dental crown and bridge removing adaptor is provided with screw tightened arcuate jaw members having crown or bridge gripping faces for securely fastening to a crown or bridge to be removed and an engaging loop for application of removing force by a tapping tool or other force applying means to lift the crown or bridge without injury thereto.

3,690,008

MULTI PATIENT DENTAL INSTRUCTION CONSOLE

Gary G. Tuttle, 25381 Posada Lane, Mission Viejo, Calif., and Douglas H. Klick, 4042 Aladdin Dr., Huntington Beach, Calif.

Filed April 26, 1971, Ser. No. 137,147
Int. Cl. A61c *19/00*
U.S. Cl. 32—71 6 Claims



A multi patient dental instruction console is disclosed comprised of a table top with a plurality of stations thereabout. Each station has a compartment with a lid forming a part of the table top when closed. Each compartment provides facilities and oral hygiene items required to enable a patient to be instructed in the proper caring for the teeth. When the lid is opened it is held at a desired angle to enable a patient to observe himself in a mirror attached to the underside of the lid. A cuspidor in the form of a funnel is provided in each compartment. The lower end of each of the funnels is connected by a length of flexible hose to a common manifold which has its outlet connected to a trap. A source of vacuum is connected to the trap to aid in withdrawing fluid from the flexible hoses into the trap.

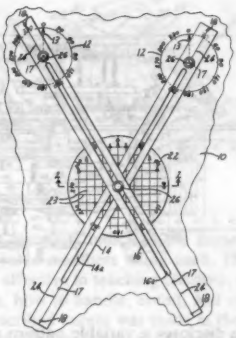
3,690,009

POSITION LOCATOR

John C. Henley, III, 2345 Crest Rd, Birmingham, Ala.

Filed June 8, 1970, Ser. No. 44,181
Int. Cl. B43l *7/00*
U.S. Cl. 33—1 MP 1 Claim

A simple and inexpensive position locator especially adapted for use by aviators in determining their location from two known fixes such as a pair of omni range navigation stations. The device includes a pair of pivoted and slotted straight edges with locator holes adjacent at least one end of each straight edge and a pin hole through the pivotal connection. Given the radials from two such stations shown on a chart, the



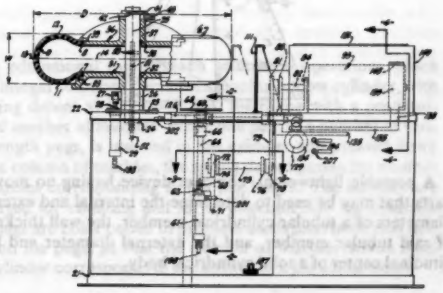
locator holes are centered over the stations and the straight edges are extended along the radials, whereupon the position of the aircraft is coincident with the pin hole in the pivot member.

3,690,010

MATRIX SELECTOR FOR TIRE CASINGS

Hugh P. Kiedrowski, and Merrill K. Eriksen, both of Lodi, Calif., assignors to Super Mold Corporation

Filed Oct. 6, 1967, Ser. No. 673,505
Int. Cl. G01b *5/08*
U.S. Cl. 33—174 R 11 Claims



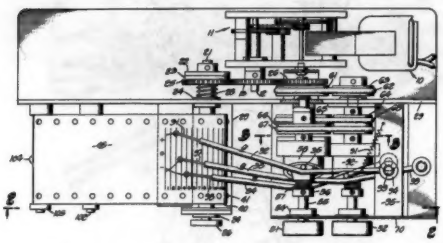
A matrix selector measures tire casings both as to diameter and as to cross sectional width and has a mechanism for quickly mounting and sustaining a tire casing in a predetermined position and for then automatically contacting the tread surface and the side wall surface of the casing. This provides two coordinates which at their intersection afford an indication on a chart of the size of matrix to be utilized in recapping or retreading the tire casing.

3,690,011

VARIABLE PATTERN RECORDER

Wesley Burchell, 17137 Seville, Fontana, Calif.

Filed Nov. 12, 1970, Ser. No. 88,836
Int. Cl. B43l *11/00*
U.S. Cl. 33—27 J **4 Claims**



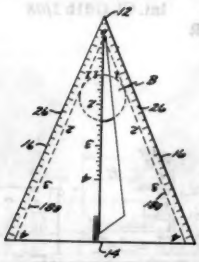
This invention discloses a variable pattern recorder which produces one or more patterns on a moving roll of paper. The patterns are made by a stylus pen moved by a cam and follower combination which can be varied by repositioning the cam.

3,690,012

CENTER, DIAMETER AND WALL THICKNESS DETERMINING DEVICE

Peter Barna, Box 871, Wilmington, Calif.

Filed March 22, 1971, Ser. No. 126,651
Int. Cl. G01b *3/04, 5/08, 5/12*
U.S. Cl. 33—178 B **4 Claims**



A portable lightweight, compact device having no moving parts that may be used to determine the internal and external diameters of a tubular cylindrical member, the wall thickness of said tubular member, and the external diameter and longitudinal center of a solid cylindrical body.

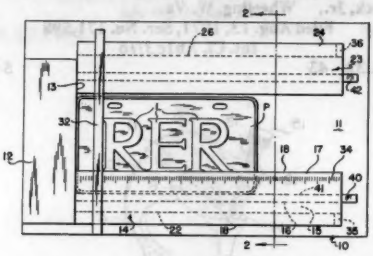
3,690,013

GUIDE FOR APPLICATION OF LETTERS OR THE LIKE TO PLATES

Samuel Leptrone, deceased, late of 1737 Robinhood Lane, Clearwater, Fla., Vivian M. Leptrone, administrix

Filed Dec. 17, 1970, Ser. No. 99,114
Int. Cl. B41b *1/00*
U.S. Cl. 33—184.5 **1 Claim**

A guide structure provides means to locate a plurality of individually formed letters on a sign plate, uniformly spaced relative to edges of the plate and from one another. One guide abutment positions a side edge of the plate and a second guide abutment spaced from the plate and parallel to the first guide



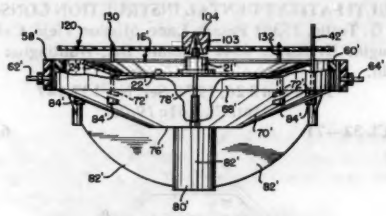
locates one end of each letter. A sliding guide moves normal to the plate guide and cooperates with a scale to indicate lateral spacing of the letters.

3,690,014

TRANSPARENT GRID FOR COMPASS

James Hunter Giltzow, Roseland, N.J., assignor to Aqua Meter Instrument Corporation, Roseland, N.J.

Filed March 18, 1970, Ser. No. 20,595
Int. Cl. G01c *17/08, 17/20*
U.S. Cl. 33—346 **21 Claims**



A generally spherical compass for mounting on a boat has a transparent grid which is superimposed over a compass card with navigational markings. The grid has radial arms extending from a central hub to the outer rim of the grid upon which a heading line, a reciprocal line and two bearing lines are inscribed. Each bearing line is offset 45° from a side of the course line, which is aligned with the longitudinal axis of the boat, in order that the boat may be navigated from either side of the helm. In an alternate embodiment, a transparent disc with a heading line, a reciprocal line and offset bearing lines inscribed on it is superimposed over the compass card. The transparent disc is supported over the compass card by a set of pins whose vertical axis is substantially offset form corresponding holes positioned about the periphery of the disc. An apparent disappearance of the transparent members, leaving only the lines visible, results from the damping fluid having approximately the same index of refraction as the transparent members.

3,690,015

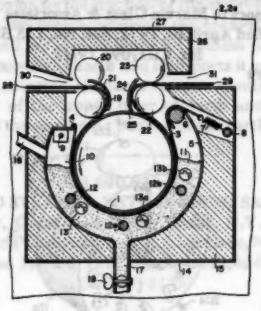
HEATING DEVICE FOR SHEET-LIKE OBJECT

Minoru Umahashi, Higashimatsuyama-shi; Hitoshi Yamakawa, Yokohama-shi, and Motoyuki Suzuki, Tokyo, all of Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Aug. 19, 1968, Ser. No. 753,440
Claims priority, application Japan, Aug. 23, 1967, 43/53759
Int. Cl. F26b *13/26*
U.S. Cl. 34—95 **11 Claims**

A heating device is provided comprising a rotary transportation roller and pre-heated powder or granular bodies arranged

and disposed around the periphery of said roller so that when a sheet-like, object to be processed is transported by said



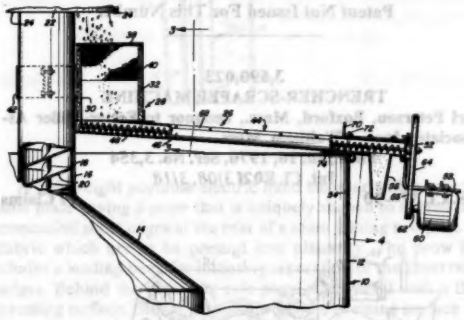
roller, said powder or granular bodies make direct contact with said object so as to heat the same.

3,690,016

SCREENING ATTACHMENT FOR GRAIN DRYER

Peter A. Walhof, and Elmer T. Walhof, both of P.O. Box 248, Edgerton, Minn.

Filed May 4, 1971, Ser. No. 140,104
Int. Cl. B07b *1/00*; F26b *17/18*
U.S. Cl. 34—174 **11 Claims**



A screen covered hopper for disposition beneath the central elevated downwardly opening discharge head of a recirculating grain dryer such as the "Tox-O-Wik," "Grain Chies" and Moridge portable grain dryers. The hopper includes a discharge auger which extends generally radially outwardly from the central area of the upper end of the grain bin portion of the dryer beyond one side wall portion thereof and is provided with a downwardly opening outlet for discharging the chaff downwardly to a collection point therefor such as a ground area disposed alongside the grain dryer or a suitable tank or wagon positioned alongside the dryer.

ERRATUM

For Class 35—10 see:
Patent No. 3,691,284

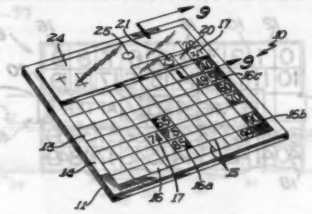
3,690,017

COIN VALUE TEACHING DEVICE

Larry M. Holmquist, 1526 Crawford St., St. Paul, Minn.

Filed July 2, 1971, Ser. No. 159,142
Int. Cl. G09b *19/18*
U.S. Cl. 35—24 R **2 Claims**

A coin value teaching device comprises a square number board having the square peripheral flange secured thereto, and having its upper surface arranged in squares. The squares which are arranged in transverse rows each has a number therein, the numbers including the numbers one to one hundred. A plurality of transparent value members having coins secured thereto may be placed upon the board, singularly or in groups, so that the last square and number covered by the



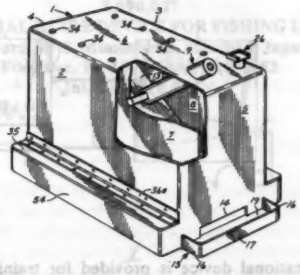
value member or members indicates the numerical value of the coins of the value members being used. This system has been found to be effective in teaching children, and especially retarded children, how to handle, count, and change money. The invention described herein was made in the course of, or under, a grant with the Department of Health, Education, and Welfare. VRA Grant RD–1810–G.

3,690,018

MATHEMATICS TRAINING TOY

John J. Arroyo, 3255 W. 65th Ave., Denver, Colo.

Filed Dec. 3, 1970, Ser. No. 94,686
Int. Cl. G09b *19/02*
U.S. Cl. 35—31 C **11 Claims**



An educational toy to teach arithmetic operations which have integer solutions; includes a sloping hollow cylinder, with a spring detent at the lower end, for filling with a predetermined number of marbles. When one peg, of a number of various length pegs, is inserted in the cylinder and pressed down on the column of marbles, the spring detent passes the number of marbles corresponding to the peg length. The marbles are displayed for counting and for re-insertion into the cylinder. The pegs are color coded to problem cards insertable into holders on the pegs, so that the number of marbles driven from the cylinder corresponds to the answer of a particular color.

3,690,019

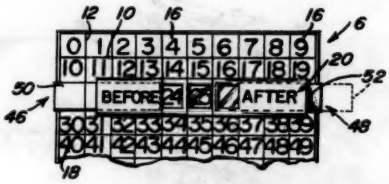
NUMBER SEQUENCE TEACHING AID

Diana S. Fernandez, P.O. Box 446, Hebbronville, Tex.

Filed Dec. 23, 1970, Ser. No. 101,022
Int. Cl. G09b *19/02*
U.S. Cl. 35—31 R **6 Claims**

A game-type teaching aid for use in a day school, kindergarten classroom, or similar place for child instruction and learning. It comprises a colorful chart which has psychological appeal and while it is such in construction that it could be used for teaching the meaning of symbolic characters, it is primarily

designed and adapted for number sequence assistance. It comprises an easy-to-handle printed chart whose playing surface is of a checkerboard-type and which as a result of intersecting horizontal and vertical lines provides columnized squares. Each square is provided with an individual character, a number for example. These numbers are confined within the



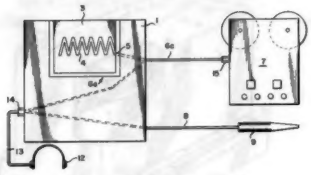
limits of the squares and are oriented and correlated and sequentially plotted for visual reference purposes. In addition to the chart there is a bodily applicable and removable unit described as a slide. This slide is manually shiftable and usable atop the charactered surface. The slide has a plurality of windows which are capable of being selectively aligned and informatively used in conjunction with the numbers.

3,690,020

INSTRUCTIONAL DEVICE FOR CHILDREN WITH LEARNING DISABILITIES

Karen Ann McBratnie, Portage, Mich., assignor to Gordon W. Hueschen, Kalamazoo, Mich.

Filed Dec. 15, 1969, Ser. No. 885,211
Int. Cl. G09b *11/04*
U.S. Cl. 35—37 **15 Claims**



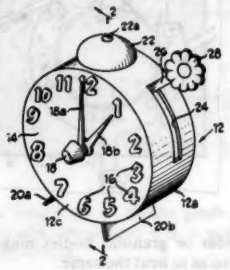
An educational device is provided for training children, especially children with learning disabilities, e.g., brain-injured children, to trace indicia such as forms, patterns, letters, numbers, and parts thereof, thereby assisting the child in learning to write and in how to go about learning to write. The indicia may be present on or in a surface in the form of an electrically conductive medium, e.g., a metal or metallic form, against a nonconductive background. The indicia may be traced by means of a stylus held by the child and associated with a sound source so that, as long as the stylus remains in contact with the indicia, a desired condition prevails, e.g., pleasant music is heard by the child. The educational device suitably comprises a stylus, a circuit board, a means for providing a reinforcing stimulus, such as a sound generating means and associated transducer means, and associated wiring, in which at least the circuit board bearing the educational indicia and the means for providing said reinforcing stimulus are electrically connected in such a manner that contact between the tip of said stylus and said indicia results in the production of said reinforcing stimulus indicating proper tracing of the educational indicia on said circuit board and whereby placement of said stylus out of contact with said indicia defeats said reinforcing stimulus, thereby indicating improper tracing, especially such a device comprising also a deskette having a recess for said circuit board and contact means for establishing electrical connection with the circuit board, and such combination of circuit board and deskette.

3,690,021

TOY CLOCK

Marvin I. Glass, Chicago, and Leonid Kripak, Villa Park, both of Ill., assignors to Marvin Glass & Associates

Filed April 20, 1971, Ser. No. 135,554
Int. Cl. G09b *19/12*
U.S. Cl. 35—39 **10 Claims**



A toy clock intended for use by pre-school children, including a simulated clock face and simulated hands, and characterized by the provision of mechanism for producing repetitive audible signals corresponding to a time set on the face of the clock.

3,690,022

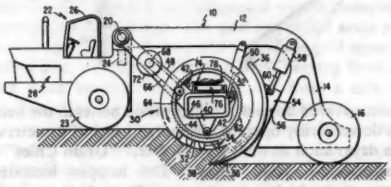
Patent Not Issued For This Number

3,690,023

TRENCHER-SCRAPER MACHINE

Carl Peterson, Boxford, Mass., assignor to Foster-Miller Associates, Inc., Waltham, Mass.

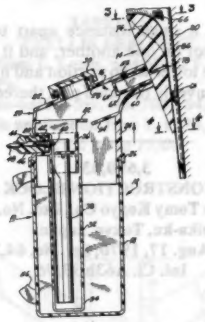
Filed Jan. 16, 1970, Ser. No. 3,354
Int. Cl. E02f *3/08, 3/18*
U.S. Cl. 37—90 **17 Claims**



A method and apparatus for excavating earth with a vehicle having a wheel or endless chain to which is secured a plurality of excavation elements such as buckets or blades which excavate earth and also provide propulsion for the vehicle. The wheel or chain is supported from the vehicle frame so that the lowermost of the excavation elements engages and bites into the surface of the earth. The wheel or chain is driven in a direction which advances the vehicle forwardly with excavation elements providing the primary source of traction. The vehicle also includes a scraper blade which is located behind the wheel or chain. The leading edge of the scraper blade advances with the vehicle and cuts into the earth below the level of the excavation wheel chain to slice off a further layer of earth. The scraper blade, additionally, serves as a braking element to resist any tendency of the excavating wheel or chain to ride upwardly out of the excavated channel. The force of the excavated earth acting on the advancing scraper blade cooperates with the weight of the vehicle to maintain the excavating wheel or chain in the excavated channel. The vehicle is assisted by a powered tractor which is employed to provide

any supplemental traction necessary to overcome any resistance presented by the earth to the advancing blade which cannot be overcome by the traction of the excavating wheel or chain alone. As the vehicle advances the excavation elements fill with earth and are moved along an endless path to a conveyor which receives the earth and transports it away from the vehicle. The excavation elements remove continually a substantial portion of the upper layer of earth and the scraper blade excavates the remaining portion of the earth.

3,690,024
HAND STEAMER WITH IRONING SALE
Leonard Osrow, Great Neck, Long Island, N.Y., assignor to Osrow Products Company, Inc., Glen Cove, N.Y.
Filed July 14, 1971, Ser. No. 162,404
Int. Cl. A47j *51/00*
U.S. Cl. 38—69 **10 Claims**



A lightweight portable electric hand steamer with a special sole plate having a prow that is uniquely shaped to spread the concealed short edges at the rear of a seam joining two plies of fabric which are to be pressed into planarity. The prow includes a leading beak for initiating separation of the short rear edges. Behind the prow the sole plate is provided with a flat pressing surface. Steam issues through the pressing surface to impinge upon the fabric plies being pressed as well as upon the short rear edges so as to render them pliant for pressing. The entire sole plate, but particularly the flat pressing surface, is formed of a synthetic plastic whereby the pressing surface has a low specific heat and a low coefficient of heat conductivity so that the pressing surface is relatively cool in comparison with a conventional metal pressing surface. This has the unusual effect of preventing the outline of the steamed-flat short rear edges from showing through the planar portions of the plies after the pressing/steaming operation has been completed.

ERRATUM
For Class 40—104.04 see:
Patent No. 3,690,261

3,690,025
Patent Not Issued For This Number

3,690,026
EXTENSION BARREL FOR USE IN FIRING PROJECTILES WITH FIREARM USING BLANK CARTRIDGES
Larry A. Rose, Box 15, Darby, Mont.
Filed Oct. 30, 1970, Ser. No. 85,434
Int. Cl. F41c *21/00, 27/06*; F42b *11/30*
U.S. Cl. 42—77 **3 Claims**

An auxiliary barrel which can be attached to the muzzle end of the barrel of a firearm such as a rifle or pistol for use in firing projectiles such as tranquilizer darts, tear gas projectiles, or the like when firing blank cartridges in the rifle. The auxiliary barrel comprises an extension barrel for receiving a projectile and directing the projectile toward a predetermined target, coupling sleeve for connecting the extension barrel to the barrel of the firearm and a locking mechanism for securing the coupling sleeve to the firearm barrel.

3,690,027
INTEGRAL GUIDE DEVICE FOR FISHING LINES
Ryuichi Ohmura, 19-3, Minami-cho, Shizuoka, Japan
Filed Dec. 10, 1970, Ser. No. 96,952
Int. Cl. A01k *87/04*
U.S. Cl. 43—24 **3 Claims**

An integral guide device for fishing lines comprising a flat ring, a pair of first legs extending downwardly from the opposite peripheral sides of the ring at a gentle slope on one side of the plane of the ring and converging toward their lower ends, a first foot provided by the converging lower ends of the first legs and extending at substantially right angles with respect to the plane of the ring, a second leg extending downwardly from the lower periphery of the ring at a substantially midpoint between the first legs and sloping on the opposite side of the plane of the ring and a second foot provided by the lower end of the second leg and extending at substantially right angles with respect to the plane of the ring.

3,690,028

LURE

Albert T. Walker, Jr., 3427 Ravenwood Rd., Anderson, Calif.

Filed Oct. 28, 1970, Ser. No. 84,661
Int. Cl. A01k *85/08*
U.S. Cl. 43—17.6 **1 Claim**

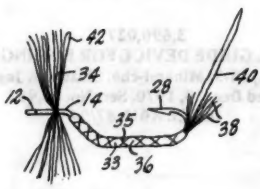
A hook and a hand tied ball of fluorescent yarns with or without a yarn tail extending therefrom secured to a longitudinal shaft of the hook by means of thread.

3,690,029

FISHING FLY

John R. Pobst, 1835 S. Walmont Dr., Jackson, Mich.

Continuation-in-part of Ser. No. 757,319, Sept. 4, 1968, Pat. No. 3,605,317. This application March 26, 1971, Ser. No. 128,256
Int. Cl. A01k *85/08*
U.S. Cl. 43—42.25 **14 Claims**



A fly fishing lure having a hook which includes a shank portion adjacent the eye and a sharp barbed end in substantial alignment with a projection of the aforementioned shank portion. Intermediate the eye and the sharp barbed end the hook shank includes portions offset downwardly from the eye and sharp end such that the majority of the weight of the hook and lure functions as a "keel" to orient the lure such that the barbed end is disposed upwardly. Fly material is disposed adjacent the eye, and additional fly material is mounted upon the arcuate hook portion contributing to the low center of gravity and "keel" action. As used in a dry fly fishing lure adapted to rest upon the water surface, the invention contemplates the use of two groups of fly material strands in angularly disposed relationship to each other to aid in the lure floatation. In a wet lure embodiment the inventive concept encompasses the use of an additional metallic weight, such as in the form of wound wire, upon the hook portion constituting the "keel" of the lure.

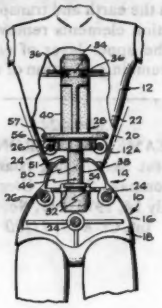
3,690,030

FLEXIBLE WAISTED DOLL UTILIZING ELASTOMERIC COUPLING MEMBER

Armando J. Garcia, Sylmar; Gregory M. Gunther, Palos Verdes Estates, and Juanito O. Villanueva, Lawndale, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Dec. 4, 1970, Ser. No. 95,219
Int. Cl. A63h *3/20*
U.S. Cl. 46—161 **6 Claims**

A doll which can pivot at the waist to perform a shaking dance movement, including an elongated rubber coupling member that connects the upper and lower torso portions of the doll. The lower torso portion has a convexly rounded top while the upper torso portion partially encompasses the top of the lower torso. The coupling member is constructed to hold



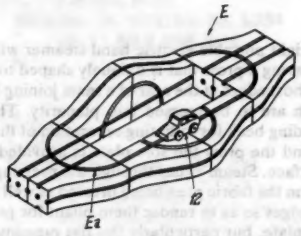
the torso portions a small distance apart to prevent interference as they pivot on one another, and it has a narrowest diameter within the lower torso portion and near the center of curvature of the convexly rounded part thereof to allow pivoting thereabout.

3,690,031

TOY CONSTRUCTION BLOCK SET

Yoshie Shinoda, c/o Tomy Kogyo Co., Ltd. No. 10, 9, 7-chome,, Tateishi, Katsushika-ku, Tokyo, Japan

Filed Aug. 17, 1970, Ser. No. 64,289
Int. Cl. A63h *33/06*
U.S. Cl. 46—17 **4 Claims**



A toy construction block set comprising a number of blocks and characterized in that all the blocks have the same configuration and dimensions and that a wide variety of toy assemblies may be assembled with the blocks. Each of the blocks is a hexahedron of a generally triangular configuration in side view and is adapted to be assembled with each other in wall-to-wall relationship.

3,690,032

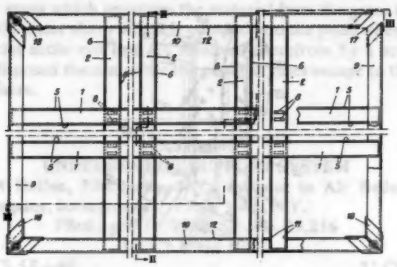
TRELLIS OR LATTICE STRUCTURE DESIGNED TO BE MOUNTED BY SELF-ENGAGEMENT OR BY SLIDING

Gilbert Fornells, 38 rue Stendhal, Paris, France

Filed April 24, 1970, Ser. No. 31,661
Int. Cl. A01g *17/06*; F16b *1/00*
U.S. Cl. 47—45 **4 Claims**

A trellis or lattice structure which is designed to constitute fencing for gardens or is intended for decorative purposes. The trellis or lattice is comprised of elongated thermoplastic elements which are "U-shaped" in cross section and which have on each side a longitudinally extending semispherical relief or boss. The elements are also provided with transversely

extending slots of a configuration corresponding to the external configuration of the elements, whereby the elements can

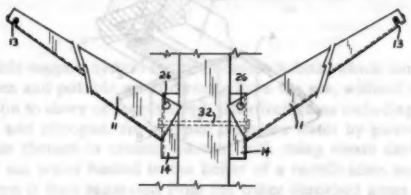


be removably assembled by vertical or horizontal sliding engagement so as to constitute a checkerwork structure.

3,690,033
TRELLIS ARM POST

Leo J. Lewis; William L. Lewis, and Mark T. Lewis, all of R.D. 4, North East, Pa.

Continuation-in-part of Ser. No. 708,164, Feb. 26, 1968, abandoned. This application June 1, 1970, Ser. No. 41,960
Int. Cl. A01g *17/06*
U.S. Cl. 47—46 **2 Claims**



Disclosed herein is a support for grape vines for use in a vineyard where a grape picking machine is to be used. The supports are for use on spaced rows of spaced posts. Each post has arms extending laterally outward from each side. The arms are swingably supported so that they can be swung up and down by grape picking machines, thereby shaking off the grapes onto a receiving member below the arms. The arms are made from sheet metal bent into the form of an inverted channel. The wires are received in slots in the distal end of the arm and are supported on the arms by means of hairpinlike clips in the arms that pass under the wires.

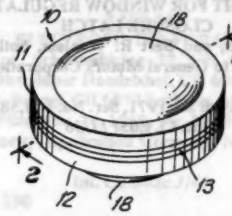
In the harvesting of grapes, machines are frequently used that pass under the grape vines and shake the vines to shake the berries off onto a conveyor belt or the like. The present invention provides an improved type of arm that can be easily swung up and down without being damaged and without damaging the grape vines.

3,690,034
ENVIRONMENTAL SEED CELL

Philip B. Knapp, Lynbrook, N.Y., assignor to Aptek Industries, Inc., Lynbrook, N.Y.

Continuation of Ser. No. 781,014, Dec. 4, 1968, abandoned. This application March 8, 1971, Ser. No. 121,882
Int. Cl. A01c *1/06*
U.S. Cl. 47—57.6 **20 Claims**

This invention relates to an environmental seed cell formed by compression to define a tablet, and method of making the same. The cell preferably includes two outer layers of particulate material of relatively large particle size and a central cushioning layer having a particle size substantially smaller than the average particle size of the material of the outer layer. The seed is embedded within the central cushioning layer in advance of pressure being applied against the outer layers to form the tablet, whereby the likelihood of damage to the seed is greatly reduced. Preferably the material is subjected to a greater pressure at its periphery and a lesser pressure at its central portions, thereby to form a tablet in which the material density is substantially greater in the peripheral area than the central area, and the thickness is greater in the central area than at the periphery. The seed is disposed in the central area.



By this means there is defined an environmental seed cell which is capable of withstanding the rigors of shipment and planting by mechanical planting mechanisms without destruction, while at the same time the seed, being in registry with the softer, less compressed central areas, is less subject to damage.

Preferably the material forming the outer layers is comprised of vermiculite which is of a laminar particle configuration, the vermiculite being admixed with substantial quantities of non-laminar particulate organic matter to prevent stratification of the vermiculite when the latter is subjected to tablet forming pressures.

3,690,035
WINDOW OR DOOR

Karl Schindlauer, 11, Ferdinand Buchbergergasse, Modling, Austria

Filed March 30, 1971, Ser. No. 129,371
Claims priority, application Austria, April 3, 1970, 3042
Int. Cl. E05d *15/52*
U.S. Cl. 49—192 **7 Claims**

The invention relates to a window or door with window wing or door wing and window case or door case made of plastics sections, the hinges comprising parts integrally connected with the wing and case, respectively, namely a hinge shell and an axially movable hinge pin, in which the improvement resides in that a plurality of hinges is arranged along the sides, preferably along all sides of the window or door, comprising hinge pins guided in sleeves inserted in bores in the wing section or case section, respectively, which hinge pins by means of an electric drive may selectively be pushed out into the respective shell-forming bore of the corresponding case section or corresponding wing section and retracted from said bore, whereby, when the hinge pins are pushed out on only one side of the window or door while at the same time the

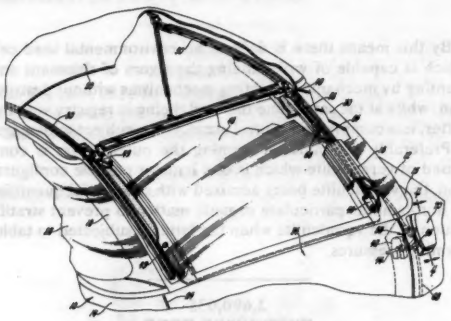
hinge pins on all other sides of the window or door are retracted, a swinging axis is formed, whereas, when on more than one side of the window or door the hinge pins are pushed out, locks are formed. With this arrangement an excellent connection between the sections is achieved.

3,690,036

CONTROL UNIT FOR WINDOW REGULATOR AND CLOSURE LATCH

Alfonsas Velavicius, and Bert R. Wanlass, both of Warren, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed April 29, 1971, Ser. No. 138,588
Int. Cl. E05f *11/38*
U.S. Cl. 49—279 **5 Claims**



A self-contained control unit for a first vehicle body closure movable by a rotary input regulator and a second vehicle body closure manually movable and maintained in a closed position by a latch, the control unit including an escutcheon adapted for mounting on a vehicle body and rotatably supporting a regulator drive shaft and a release shaft, a drive member adapted to drive the regulator and rotatably supported on the drive shaft, a first sliding clutch on the drive shaft having a collar thereon, the first clutch being spring biased toward a coupling position coupling the drive shaft to the drive member, a second sliding clutch on the release shaft, the second clutch having an actuating arm adapted to release the closure latch when the second clutch is rotated and a collar engaging the collar on the first clutch, the second clutch being movable to a coupling position drivingly coupled to the release shaft for unitary rotation therewith while the two collars and the spring cooperate to synchronize movement of the two clutches, and a lock controlled cylinder cam rotatably supported on the escutcheon and operative to move the second clutch in and out of the coupling position thereof thereby to effect simultaneous isolation of both the latch and the regulator.

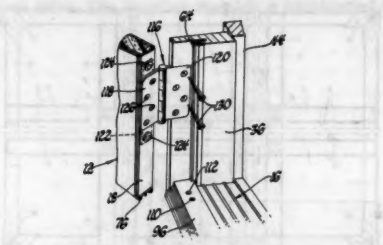
3,690,037

PREFABRICATED DOOR AND FRAME ASSEMBLY

John J. Kempel, Pontiac, Mich., assignor to Taylor Garage Doors, Inc., Detroit, Mich.

Filed Jan. 14, 1970, Ser. No. 2,737
Int. Cl. E06b *1/70*; E05d *7/04*; E06b *3/32*
U.S. Cl. 49—380 **4 Claims**

A preformed door, preferably of metal, with a frame, of wood, fitted to it for side clearance, and with magnetic weather stripping of special design engaged in saw kerfs in the header bar and lock jamb, non-magnetic weather stripping at



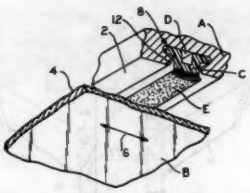
the hinge jamb, an adjustable threshold member, and a floating hinge connection allowing the door to be adjusted relative to a tilted lock jamb, as and when necessary.

3,690,038

RECESSED WEATHER STRIP BODY

Melvin L. Dieterich, North Olmsted, Ohio, assignor to The Standard Products Co., Cleveland, Ohio

Filed Nov. 16, 1970, Ser. No. 89,657
Int. Cl. E06b *7/16*
U.S. Cl. 49—489 **3 Claims**



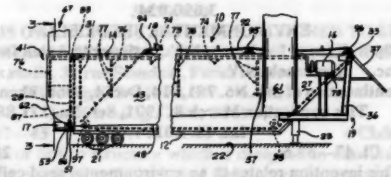
A T-shaped weather strip adapted to fit into a T-shaped recess is made with a longitudinal cavity in the crossbar of the T. The free end of the upright of the T is provided with sealing means such as, for example, flocking which engages the surface of a cooperating closure element to form a seal against the passage of air which the weather strip is designed to prevent. The dimensions and structure are such that the strip can be squeezed transversely slightly to narrow the crossbar of the T sufficiently to enable lateral or longitudinal insertion of the strip into the slot.

3,690,039

PORTABLE APPARATUS FOR REMOVING PARTICULATE MATERIAL FROM EXHAUST GASES

Willard L. Salemink, 209 W. 6th St., West Liberty, Iowa

Filed Aug. 17, 1970, Ser. No. 64,388
Int. Cl. B01d *47/00*
U.S. Cl. 55—228 **3 Claims**



An apparatus to remove particulate material from exhausted gases comprising a washing chamber connected to a settling pond to form an integral portable unit. The apparatus

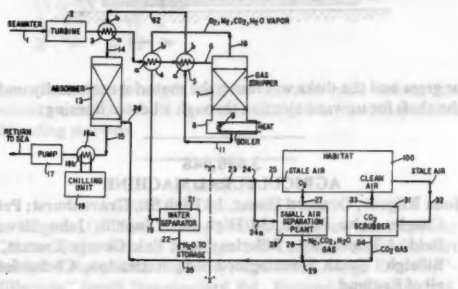
includes an elongated settling pond and a U-shaped gas washing chamber connected thereto, the chamber adapted to receive the particle-laden gases and subject the gases to a water spray which separates the material from the gases into a particle-water slurry which is pumped into the pond where the particles settle out and are removed therefrom by a scraper unit disposed therein, while the purified gases escape to the atmosphere.

3,690,040

UNDERSEA LIFE SUPPORT SYSTEM

Albert Halfon, Niskayuna, N.Y., assignor to Air Reduction Company, Incorporated, New York, N.Y.

Filed April 16, 1970, Ser. No. 29,216
Int. Cl. B01d *19/00*
U.S. Cl. 55—46 **11 Claims**



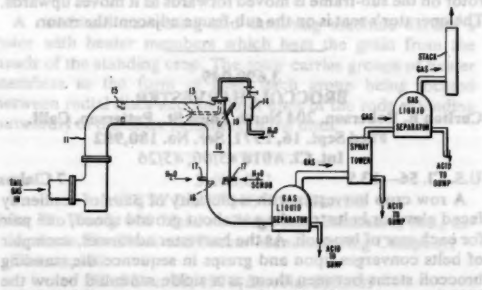
A life support system for an undersea habitat which derives oxygen and potable water directly from the sea, without connection to shore or supply ships. Dissolved gases including oxygen and nitrogen, are stripped from sea water by passing a stream thereof in counter-current with rising steam derived from sea water heated in the boiler of a rectification tower. Oxygen is then separated from the other desorbed gases and conveyed to the habitat. The exhaust gas from the habitat is passed through a carbon dioxide absorber before being recirculated in the habitat. The carbon dioxide from the absorber and the residue of desorbed gases from the stripper, including nitrogen, are reabsorbed in the sea water, which is ultimately cooled and returned to the ocean.

3,690,041

SCRUBBING OF GASES CONTAINING $TiCl_4$

David N. Low, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 30, 1971, Ser. No. 185,254
Int. Cl. B01d *47/00*
U.S. Cl. 55—71 **3 Claims**



Industrial gas streams containing sizable amounts of HCl have in the past been efficiently scrubbed by large amounts of water or water solutions. But when a gas stream has also contained $TiCl_4$ vapor, as when TiO_2 has been produced via the "chloride" process, even scrubbing has not prevented an opaque plume from being vented to the atmosphere. The plume disappears or is markedly reduced in intensity, however, if a controlled amount of water is evaporated into the gas stream before scrubbing.

3,690,042

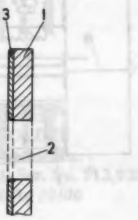
Patent Not Issued For This Number

3,690,043

ELECTROFILTER FOR GASES

Bodo Futterer, Schonbuhlring 37, CH 6000 Luzern; Otto Stemme, Obwaldner Handelshof, CH 6060 Sarnen, and Jurgen Mayer, Bruggi, CH 6072 Sachseln, all of Switzerland

Filed Nov. 24, 1969, Ser. No. 879,196
Claims priority, application Germany, Nov. 25, 1968, P 18 10 842.4
Int. Cl. B03c *3/41*
U.S. Cl. 55—150 **2 Claims**



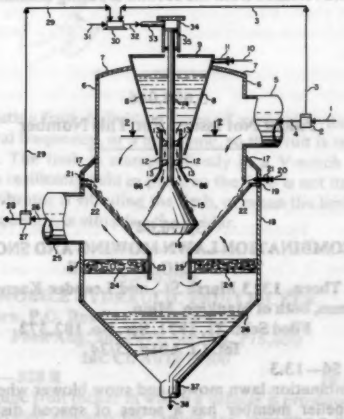
A perforated electrode for an electrofilter for gases which includes a sandwich-like arrangement of at least one electrically conductive support layer and a thinner spray discharge layer. The spray discharge layer is formed from a material which has a higher resistance to burning due to spray-discharge than the material of the support layer.

3,690,044

ADJUSTABLE VENTURI GAS SCRUBBER

John G. Boresta, Teaneck, N.J., assignor to Chemical Construction Corporation, New York, N.Y.

Filed March 18, 1970, Ser. No. 20,579
Int. Cl. B01d *47/10*
U.S. Cl. 55—223 **14 Claims**



An annular venturi gas scrubber in which the throat is adjusted to compensate for changes in gas flow rate by suspend-

ing the central conical baffle from a central vertical rod which extends upwards from the apex of the conical baffle and which is vertically movable. Two venturi gas scrubbers are also provided in series within a container and in vertical alignment, with the upper first scrubber having an adjustable throat. The first scrubber removes entrained solid particles from the gas stream and the second scrubber removes gaseous contaminants such as sulfur dioxide.

3,690,045

AIR FILTER

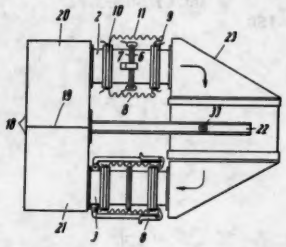
Gerhard Max Neumann, Lentzeallee 93, Berlin, 33, Germany

Filed Feb. 5, 1969, Ser. No. 796,695

Claims priority, application Germany, May 3, 1968, P 17 57 388.5

Int. Cl. B01d *46/00*

U.S. Cl. 55—356 **7 Claims**



A filter for separation of suspended substances from a flow of air or gas comprises a contaminated gas duct, a filtered-gas duct, each duct having a stub, a disposable filtering assembly having an inlet stub and an outlet stub intended to be attached to the contaminated-gas stub and the filtered stub respectively, and two tubes of flexible sheet material attached to the inlet and outlet stubs respectively. Each duct stub has two gas-tight securing means, the first securing means allowing attachment of the corresponding tube the second securing means allowing addition of successive replacement filtering assemblies, after sealing and cutting of the tube, in such a manner that the remnant of tube attached to the duct stub may be detached from the first securing means after being surrounded by a new tube attached to the second securing means. The new tube is subsequently secured by the first securing means and released from the second securing means.

3,690,046

Patent Not Issued For This Number

3,690,047

COMBINATION LAWN MOWING AND SNOW THROWING MACHINE

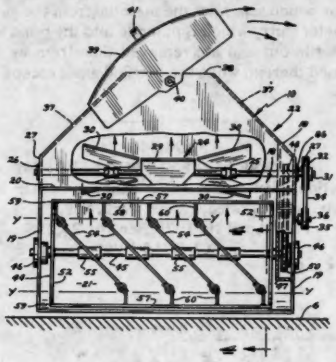
Roy M. Thoen, 1313 Marsh St., and Leander Kassuelke, 820 Sherman, both of Mankato, Minn.

Filed Sept. 21, 1971, Ser. No. 182,372

Int. Cl. A01d *35/24*

U.S. Cl. 56—13.3 **6 Claims**

A combination lawn mower and snow blower wherein a rotary impeller member has a series of spaced disks axially mounted in spaced parallelism along a shaft with the disks being disposed at a substantially 45° angle to the shaft axis with diametrically opposing cutter bars mounted to extend along the disk peripheries which are closest to the shaft so that during rotation of the member, the bars will cut through snow



or grass and the disks will move the material rearwardly under the shaft for upward ejection through a beater housing.

3,690,048

AGRICULTURAL MACHINE

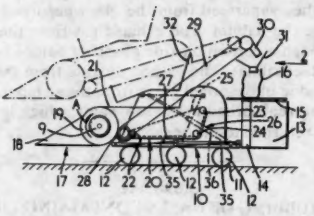
John Kilgour, Orchard House, 14 High St., Gravenhurst; Peter Charles John Payne, 34 High St., Clophill; John Stewart Reid, 4 Trinity Rd., Billericay, and Eric George Everett, "Billeigh" South Hanningford Rd., Rettendon, Chelmsford, all of England

Filed May 14, 1971, Ser. No. 143,413

Claims priority, application Great Britain, May 21, 1970, 24,538/70

Int. Cl. A01d *41/08, 45/30*

U.S. Cl. 56—13.5 **8 Claims**



A harvesting machine has a base frame and a sub-frame. The sub-frame is moved up and down relative to the base frame by a parallel linkage arranged so that a grain gathering rotor on the sub-frame is moved forwards as it moves upwards. The operator's seat is on the sub-frame adjacent the rotor.

3,690,049

BROCCOLI HARVESTER

Carlton E. Roberson, 204 North Third St., Patterson, Calif.

Filed Sept. 16, 1971, Ser. No. 180,982

Int. Cl. A01d *45/00, 45/26*

U.S. Cl. 56—13.9 **7 Claims**

A row crop harvester with a plurality of pairs of resiliently faced elevator belts traveling at about ground speed, one pair for each row of broccoli. As the harvester advances, each pair of belts converges upon and grasps in sequence the standing broccoli stems between them as a sickle mounted below the belts severs them from the growing plants. The belts in each pair travel at slightly different speeds so as to rotate each severed stem about its axis as it is carried past leaf beaters that both remove the leaves from the rotating stem and simultane-

ously draw each downwardly until its flower resides adjacent the traveling belts. Rotary knives then trim the depending

stems to a uniform length and the elevator belts deliver the trimmed stems to a chaff separator and subsequent inspection and loading stations.

3,690,050

AGRICULTURAL MACHINE

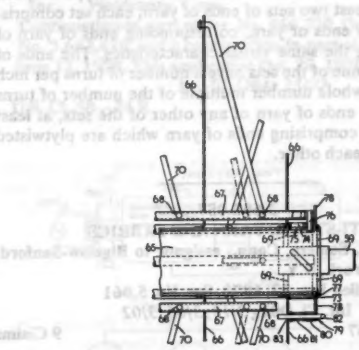
John Kilgour, Orchard House, 14 High St., Gravenhurst; Peter Charles John Payne, 34 High St., Clophill; John Stewart Reid, 4 Trinity Rd., Billericay, and Eric George Everett, "-Billeright" South Hanningford Rd., Rettendon, Chelmsford, all of England

Filed May 14, 1971, Ser. No. 143,412

Claims priority, application Great Britain, May 21, 1970, 24,357/70

Int. Cl. A01d *41/08, 45/30*

U.S. Cl. 56—129 **13 Claims**



A combined harvesting and threshing machine carries a rotor with beater members which beat the grain from the heads of the standing crop. The rotor carries groups of beater members in the form of rods, each group being located between radial discs and the outer ends of the rods extending outwardly to the outer periphery of the discs.

3,690,051

SAFETY LAWNMOWER BLADE

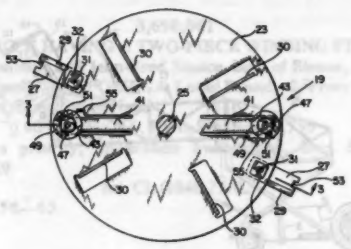
John W. Wood, 606 Meadow Ridge Rd., Baltimore, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.

Filed Dec. 28, 1971, Ser. No. 213,039

Int. Cl. A01d *55/18*

U.S. Cl. 56—295 **10 Claims**

A lawnmower blade construction comprising a disc having a plurality of radially disposed cutting blades pivoted thereto. The blades are positioned for cutting by centrifugal force but are pivotally retractable should they strike an obstruction. Novel means is provided to retain the blades in a retracted and



non-cutting position after striking an obstruction to reduce the likelihood of serious injury to a user and of damage to the mower or blade.

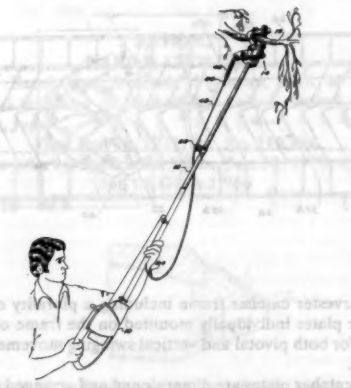
3,690,052

LIMB HOLDER

Spencer B. Sitter, Box 415, McLean, Tex.

Filed Feb. 9, 1971, Ser. No. 113,928

Int. Cl. H01g *19/00*

U.S. Cl. 56—328 **22 Claims**

In harvesting fruit, individual limbs of a tree are vibrated at their natural frequency, or a harmonic, so the fruit is removed therefrom. The limb is clamped firmly in a V-notch holder with a gate resiliently held in place so the limb is not damaged when the vibrator is vibrating the limb, or when the limb, at its natural frequency, is vibrating the holder.

3,690,053

MOBILE HYDRAULIC FRUIT PICKER

Roy B. Thorn, P.O. Box 711, Inverness, Fla.

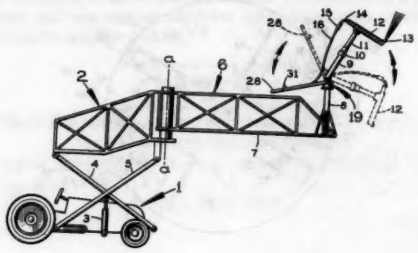
Filed Aug. 26, 1971, Ser. No. 175,050

Int. Cl. A01g *19/00*

U.S. Cl. 56—328 R **10 Claims**

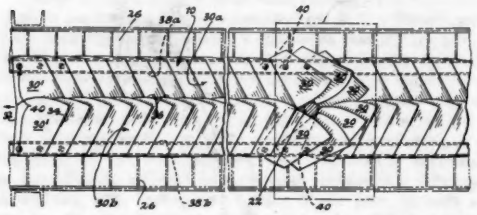
A hydraulic fruit picker in which a vehicle is provided with a power operated elevator for raising and lowering a platform and operator with respect to the fruit area on a tree. The elevator includes a hydraulic device which mixes pressurized water and air into a bubble formation and ejects same at a high

velocity from a nozzle. The device includes swivels whereby the operator may direct the output nozzle and water-air stream through azimuthal and vertical angles with respect to



the tree. Thus the high velocity of the water-air mixture, when impinged upon ripe fruit, will detach same undamaged and permit it to gravitate for collection.

3,690,054
CATCHER FRAME FOR HARVESTER
Angelo N. De Carlo, 10596A Main St., and Vito G. De Carlo, 11180 Mile Block Rd., both of Collins, N.Y.
Filed Aug. 11, 1970, Ser. No. 62,788
Int. Cl. A01g *19/00*
U.S. Cl. 56—330 **11 Claims**

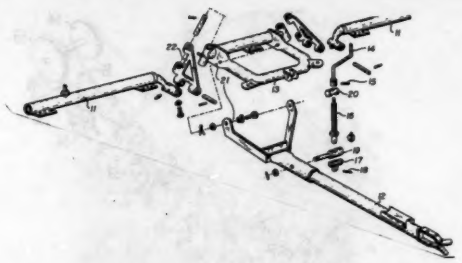


A harvester catcher frame including a plurality of flexible catcher plates individually mounted on the frame of the harvester for both pivotal and vertical swinging movement by coil springs.

The catcher plates are dimensioned and arranged such as to minimize the area of an opening created between the plates due to engagement thereof with an obstacle, such as a trellis post or the like.

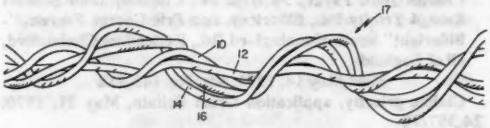
3,690,055
AGRICULTURAL MACHINE WITH ARTICULATED FRAME AND ROTARY IMPLEMENTS
Walter Reber, Saverne, France, assignor to Societe Dite: Kuhn Freres & Cie., Saverne (Bas-Rhin), France and Societe En Commandite Simple, Saverne (Bas-Rhin), France
Filed July 11, 1969, Ser. No. 841,035
Claims priority, application France, July 18, 1968, 689222
Int. Cl. A01d *79/02*
U.S. Cl. 56—370 **2 Claims**

The disclosure is of an agricultural machine, for example a tedding or swath-turning machine, comprising an articulated frame for towing and rotary implements mounted upon wheels or rollers or sledges or other carrier elements and adapted to be towed by an agricultural tractor or other vehicle, characterized in that the articulated frame has two articulations to permit the machine to follow the contours of the ground and



these two articulations are disposed between the two carrier elements which are closest to the middle of the machine.

3,690,056
CABLED YARN
Robert I. Peters, Longmeadow, Mass., assignor to Bigelow-Sanford, Inc., Thompsonville, Conn.
Filed April 5, 1971, Ser. No. 131,074
Int. Cl. D02g *3/28, 3/38*
U.S. Cl. 57—139 **4 Claims**



A cabled yarn, suitable for use in Moresque-type carpets, comprising at least two sets of ends of yarn, each set comprising at least two ends of yarn, corresponding ends of yarn of each set having the same visual characteristics. The ends of yarn of at least one of the sets have a number of turns per inch which is not a whole number multiple of the number of turns per inch of the ends of yarn of any other of the sets, at least one of the sets comprising ends of yarn which are plytwisted with respect to each other.

3,690,057
ANTI-STATIC YARN AND FABRICS
Alan H. Norris, Somers, Conn., assignor to Bigelow-Sanford, Inc., New York, N.Y.
Filed Jan. 22, 1970, Ser. No. 5,061
Int. Cl. D02g *3/12, 3/06, 3/02*
U.S. Cl. 57—167 **9 Claims**

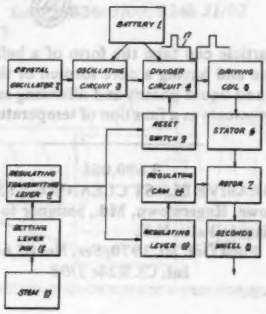
The invention relates to the production of an anti-static yarn, especially useful in the making of carpets. The anti-static yarn is made by fibrillating into fibers a web comprising a monoaxially oriented film of synthetic material faced with metal, such as aluminum. The metallized fibers are blended with other fibers, such as wool and/or nylon and converted into an anti-static yarn, which has utility in forming the pile elements of a carpet.

3,690,058

ELECTRIC OR ELECTRONIC TIMEPIECE

Masahiro Kurita, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Sept. 8, 1970, Ser. No. 70,189
Claims priority, application Japan, Sept. 25, 1969, 44/76098
Int. Cl. G04c 3/00; G04b 27/00
U.S. Cl. 58—23 R 4 Claims



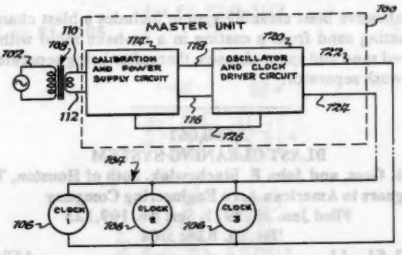
An electric or electronic timepiece is provided with a mechanical regulating member coordinately actuated with a switch so that driving current for the electro-mechanical transducer of the timepiece is cut off before operative engagement by said regulating member and is not restored until after said regulating member is disengaged.

3,690,059

CLOCK SYSTEM

Arthur W. Haydon, Middlebury, Conn., assignor to Tri-Tech, Inc., Waterbury, Conn.

Continuation-in-part of Ser. No. 866,322, Oct. 14, 1969, Pat. No. 3,643,420, and a continuation-in-part of Ser. No. 45,609, June 12, 1970. This application Oct. 20, 1970, Ser. No. 82,405
Int. Cl. G04c 13/02
U.S. Cl. 58—24 R 9 Claims



A clock for use either with an external source of alternating current of uniform frequency or an internal, auxiliary, rechargeable power source. The clock is normally synchronized with the uniform frequency of the alternating current and has a solid state oscillator circuit. A time indicating device is operated by a small synchronous motor requiring a minimal power input from the oscillator. During interruptions of power from the external source of alternating current the time indicator synchronous motor is driven at a reduced voltage supplied by the auxiliary power source. A calibrating circuit is provided to allow adjustment, comparison, and synchronization of the output of the oscillator with the frequency of the external alternating current source. In some embodiments a plurality of time indicating devices are operated simultaneously by the oscillator.

3,690,060

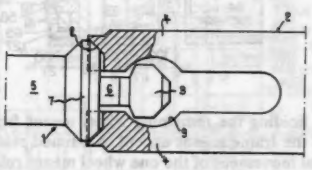
Patent Not Issued For This Number

3,690,061

WATCH HAVING A TWO-PIECE WINDING STEM

Jean Humbert, and Jean-Fred Studer, both of Bienne, Switzerland, assignors to OMEGA Louis Brandt & Frere S.A., Bienne, Bern, Switzerland

Filed Nov. 16, 1970, Ser. No. 89,759
Claims priority, application Switzerland, Dec. 5, 1969, 18161/69
Int. Cl. G04b 27/02
U.S. Cl. 58—63 3 Claims



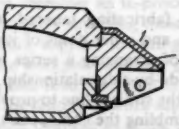
A "broken" winding stem for a watch or the like comprises two sections respectively for driving relation with the winding crown and watch or like movement and having a head on one section elastically or resiliently held by a clip on the other section, has auxiliary clutch means releasably securing said sections together to prevent rotation of the watch movement, said means including a clutch element on each said section, said elements having clutch faces cooperative upon engagement.

3,690,062

HARD WATCH CASE

Masami Kasai, and Yoshiaki Fujimori, both of Nagano, Japan, assignors to Kabashiki Kaisha Surva, Seirosha Tokyo, Japan

Filed Jan. 29, 1971, Ser. No. 110,960
Claims priority, application Japan, Jan. 30, 1970, 45/7674
Int. Cl. G04b 37/00
U.S. Cl. 58—88 R 11 Claims



A watch case resistant to mechanical defacement and corrosion, having an external pressed and sintered component at least a part of which comprises at least one material selected from the group consisting of Al_2O_3, BeO, CeO_2, Cu_2O, Cr_2O_3, CoO, Fe_2O_3, Fe_3O_4, MgO, MnO, NiO, Nb_2O_5, SiO_2, Ta_2O_5, ThO_2, SnO_2, TiO_2, V_2O_3, ZnO, ZrO_2, $Al_2O_3 \cdot SiO_2$, $Al_2O_3 \cdot TiO_2$, $BeO \cdot Al_2O_3$, $CoO \cdot Al_2O_3$, $MgO \cdot Al_2O_3$, $MgO \cdot ZrO_2 \cdot SiO_2$, $ZnO \cdot Al_2B3$ and $ZrO_2 \cdot SiO_2$.

3,690,063

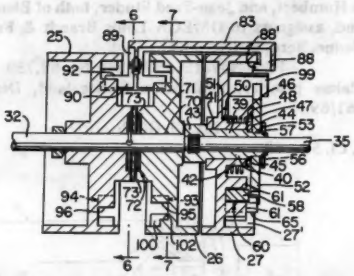
DIGITAL CLOCK STRUCTURE AND PARTS THEREFOR

Robert Strachan, Woccott, Conn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Dec. 28, 1971, Ser. No. 213,085
Int. Cl. G04b 19/02
U.S. Cl. 58—125 C 18 Claims

A digital clock construction having a frame means carrying a rotatable shaft driven by a timer at a predetermined rate. A plurality of time indicating wheel means are rotatably mounted on the shaft. A first drive structure is carried by the

shaft and is operatively associated with one of the wheel means for incrementally rotating the one wheel means relative to the shaft on a time basis as the shaft rotates. Other drive structure is operatively associated with the shaft and the remaining wheel means to tend to rotate the remaining wheel means as the shaft rotates. Latch structure is operatively associated with the one wheel means and the remaining wheel



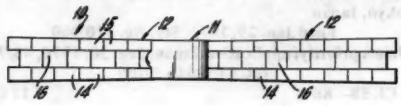
means for holding the remaining wheel means from rotating relative to the frame means except in a timed relation to the incremental movement of the one wheel means relative to the frame means. The latch structure and wheel means are so constructed and arranged that the latch structure will not unlatch the wheel means when the clock construction is jarred during at least part of the cycle of operation of the wheel means.

3,690,064

TAPERED WRIST BAND

Louis Pompeo, Bloomfield, N.J., assignor to Duchess Mfg. Corp., Hoboken, N.J.

Filed April 28, 1971, Ser. No. 138,129
Int. Cl. F16g *13/18*
U.S. Cl. 59—35 **8 Claims**



A method of fabricating tapered link chains for watch bands, bracelets, and other items of jewelry. The method includes the step of arranging a series of end lug blanks in a straight line in side-by-side relationship. The blanks are cut at a slight angle to the straight line to provide two sets of tapered end lugs. In assembling the chain, each of the two sets of end lugs are arranged with the tapered portion facing to the outside of the chain so that the links of the chain will contain a continuous taper. Center link-halves are staggered between the tapered end lugs, and the chain links are secured by connecting rods extending through holes in the link-halves and fastened at each end to a perspective one of the tapered end lugs.

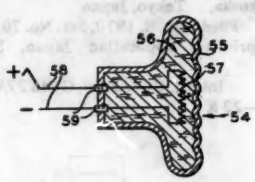
3,690,065

THERMAL ACTUATOR AND METHOD OF MAKING

Louis Bucalo, 135 Roberts St., Holbrook, N.J.

Continuation of Ser. No. 854,024, Aug. 25, 1969, abandoned, which is a continuation of Ser. No. 584,037, Sept. 12, 1966, abandoned, which is a continuation-in-part of Ser. No. 426,238, Jan. 18, 1965, abandoned. This application Oct. 12, 1970, Ser. No. 80,229
Int. Cl. F01k *25/02*
U.S. Cl. 60—23 **5 Claims**

An article of manufacture formed of a plurality of layers of deposited metal with the layers being separated by interface layers which render the deposited metallic layers relatively movable under sheer stress to effect damping and decreased force deflection rate. In one preferred embodiment of the invention the article can take the form of a bellows defining a closed volume and having a core formed of thermal material having solid and liquid phases and affording substantially different displacements as a function of temperature.

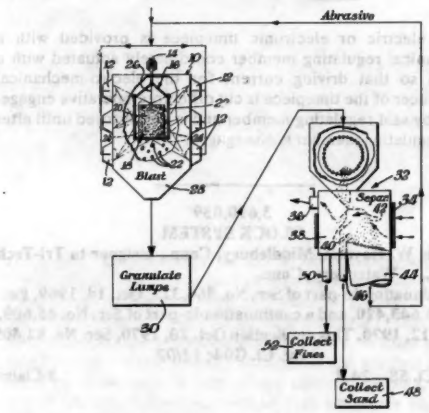


3,690,066

ABRASIVE BLAST CLEANING SYSTEM

Russell L. Rowe, Hagerstown, Md., assignor to The Carborundum, Niagara Falls, N.Y.

Filed Oct. 30, 1970, Ser. No. 85,645
Int. Cl. B24c *3/08*
U.S. Cl. 51—9 **3 Claims**



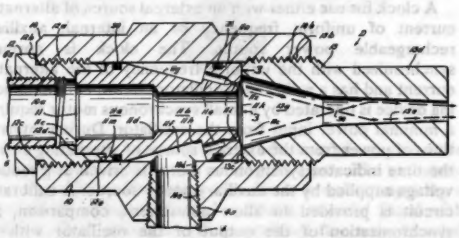
An abrasive blast cleaning system includes a blast chamber for blasting sand from a casting in a no-bake mold with the removed sand and spent abrasive thereafter being separated in an air wash separator.

3,690,067

BLAST CLEANING SYSTEM

John B. Goss, and John E. Stachowiak, both of Houston, Tex., assignors to American Aero Engineering Company

Filed Jan. 25, 1971, Ser. No. 109,123
Int. Cl. B24c *5/04*
U.S. Cl. 51—11 **4 Claims**



A scouring or blast cleaning system wherein a supply of flowable abrasive material is introduced into suspension in a

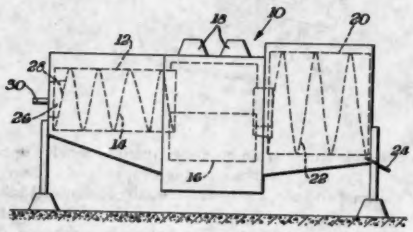
flowing stream of fluid within an injector device and the resulting stream then flows out of the injector device and is impinged upon the object to be scoured.

3,690,068

CONTINUOUS TREATING APPARATUS

Richard E. Coss, and Willard J. Harper, both of Hagerstown, Md., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed Sept. 8, 1970, Ser. No. 70,315
Int. Cl. B24c *3/00*; B24b *31/02*
U.S. Cl. 51—13 **10 Claims**



A continuous treating apparatus includes a tubular infeed chamber having a spiral conveyor therein with a feed tube connected to the first flight of the conveyor. A feed spout is disposed in the feed tube displaced from a vertical plane passing through the longitudinal axis of the tubular chamber.

3,690,069

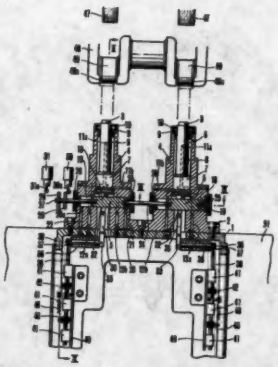
Patent Not Issued For This Number

3,690,070

WORKPIECE LOCATING APPARATUS FOR USE IN MULTI-WHEEL GRINDING MACHINES

Hiroshi Ohta, Kariya, Japan, assignor to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed Oct. 23, 1970, Ser. No. 83,505
Int. Cl. B24b *5/42*
U.S. Cl. 51—105 **5 Claims**



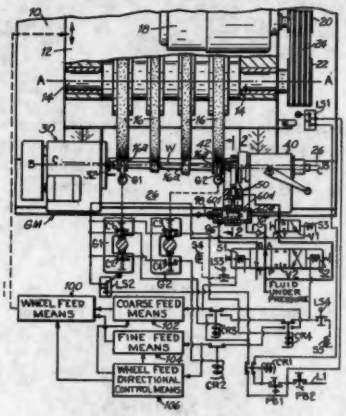
In a workpiece locating apparatus for working a plurality of spaced apart portions by means of a multi-wheel grinding machine, respectively defined between a pair of surfaces of said workpiece, for example crank-pins of a crankshaft there are provided a plurality of spaced apart locator heads respectively confronting the portions to be worked, mechanisms for moving the locator heads towards and away from the portions to be worked and a mechanism for simultaneously rotating the locator heads. The locator heads are inserted between the surfaces of respective pairs when moved towards the portions to be worked and are urged against one of the surfaces when rotated.

3,690,071

TAPER COMPENSATING METHOD AND APPARATUS

Oiva E. Hill, Holden, Mass., assignor to The Warner & Swasey Company, Cleveland, Ohio

Filed Dec. 24, 1970, Ser. No. 101,297
Int. Cl. B24b *49/04*
U.S. Cl. 51—165.91 **25 Claims**



Taper compensating apparatus and method for elastically deforming a work support supporting one end of a workpiece being ground in a cylindrical grinding machine controlled by at least two in-process gages engaging opposite end portions of the workpiece. The apparatus distorts and forces the work support and hence the axis of the workpiece away from the grinding wheel to intentionally grind a taper in the same direction. When one end portion of the tapered workpiece furthest away from the deformed work support is ground to a predetermined oversize diameter an in-process gage thereon stops the infeed and actuates reversing means to relieve and allow the deformed work support to spring back and feed, without lost motion, the workpiece into the grinding wheel at a controlled precision fine feed rate until the end portion of the workpiece nearest the deformed work support is ground to exactly the same amount oversize as is the one end portion. Thereafter, the in-process gage thereon resumes the grinding feed at a fine rate until at least the end portions are ground to the final diameter at which time the gages stop and reverse the feed mechanism.

3,690,072

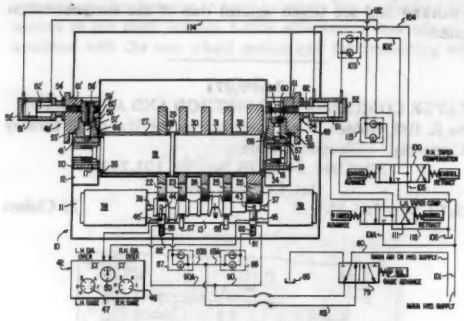
MEANS FOR ADJUSTING THE ANGULAR RELATION BETWEEN A WORKPIECE TO BE GROUND AND A TOOL

Ralph E. Price, Waynesboro, Pa., assignor to Litton Industries, Inc., Los Angeles, Calif.

Filed , Ser. No. 98,807
Int. Cl. B24b *49/04*
U.S. Cl. 51—165 R **8 Claims**

An automatic taper compensator is used to maintain a parallel relationship between the axis of a wide grinding wheel or multiple grinding wheels (22–26) and the centerline of a cylindrical workpiece (W) on a grinding machine. Two gage heads (43, 44) are automatically advanced during the grinding cycle at the extreme ends of the workpiece portions being ground. A differential circuit (48) directly compares the volt-

age output of the right hand (R.H.) and the left hand (L.H.) gage heads (43, 44) and generates a signal when the difference varies by more than a predetermined amount. Compensation is effected by deflecting the appropriate wheel spindle bearing support (41 or 41') in a forward direction, as separate force applying means (49, 49') are provided at each end of the wheel spindle (18) for that purpose.



3,690,073

Patent Not Issued For This Number

3,690,074

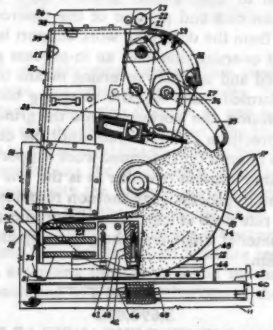
GRINDING WHEEL GUARD

Theodore A. Mrugala, Auburn, Mass., assignor to The Warner & Swasey Company, Cleveland, Ohio

Filed Sept. 21, 1970, Ser. No. 74,051

Int. Cl. B24b *55/04*

U.S. Cl. 51—269 **5 Claims**



An arrangement for containing the grinding wheel fragments and the kinetic energy released therewith in the event of a grinding wheel failure in a high speed precision grinding machine, including a grinding wheel guard having a lower portion thereof of substantially constant U-shaped horizontal cross section open at its lower end and provided adjacent to its lower end with U-shaped sets of reinforcing ribs extending internally thereof toward the grinding wheel enclosed thereby, and including a distortion resisting and energy absorbing assembly fixedly mounted adjacent to and spanning the open lower end of the grinding wheel guard.

3,690,075

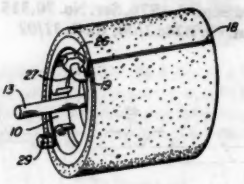
DRUM HOLDER

Edward F. Schoonmaker, 501 Campbell Ave., White Bear Lake, Minn.

Continuation-in-part of Ser. No. 870,229, July 28, 1969, abandoned. This application Dec. 20, 1971, Ser. No. 209,701

Int. Cl. B24b *45/00, 23/00*

U.S. Cl. 51—368 **8 Claims**



Disclosed is a new drum holder adapted to receive upon its peripheral cylindrical surface a snug wrapping of a removable sheet material and adapted to substantially continually take up slack as generated in the wrapping during rotation of the holder in use applications. The holder comprises a drum rotatable about its axis, with axially-parallel elements as part of the drum. Those elements include a tightening key chamber, tightening key, and a passage from the key chamber to a slit in the periphery of the drum. The slit is radially advanced with respect to the key chamber during rotation of the drum in use applications. The key holds the trailing end of a sheet wrapped about the drum. The leading end of the sheet is held by pinching action between the key and a radially outward wall of the key chamber. A centrifugal weight on an arm off the key member serves to torque the key itself in a rotary direction opposite to that of the drum rotation in use applications; and this serves in turn to take up slack in the sheet wrapping and also contributes to the holding action on the leading and trailing portions of the sheet wrapping.

3,690,076

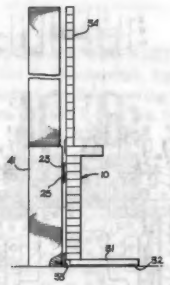
PRECAST FIREPLACE VENEER

Willard V. Harris, Jr., Cypress, Calif., assignor to Western Monolithic Concrete Products, Long Beach, Calif.

Filed July 9, 1970, Ser. No. 53,431

Int. Cl. E04f *17/02*

U.S. Cl. 52—36 **2 Claims**



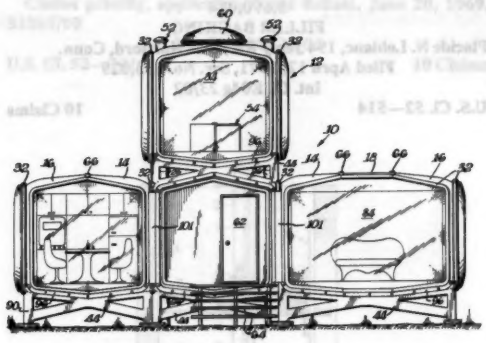
A one piece concrete cast fireplace veneer having a simulated masonry finish such as a brick or stone and with brackets or bolts cast in the veneer used for holding it to the fireplace. There may be provided a second precast section which also has a surface finish simulating conventional fireplace materials and which extends the facing up to the ceiling.

3,690,077

BUILDING CONSTRUCTION

John D. Dalgliesh, Jr., P.O. Box 47, Free Union, Va., and Clinton E. Kisner, Rt. 4, Box 163, Charlottesville, Va.

Filed March 4, 1970, Ser. No. 16,463
Int. Cl. E04b 1/348, 1/40
U.S. Cl. 52—79 5 Claims



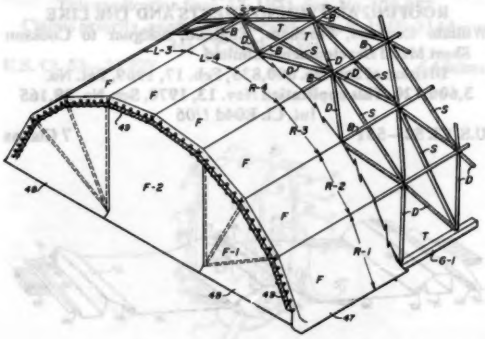
A prefabricated building particularly adaptable for low cost housing includes a core section which comprises a unitary one piece living unit having an opening on at least one side with a lip around the opening. A first module which comprises a partial living unit is disposed next to the core and includes a like opening having a peripheral lip juxtaposed to the core lip with a compression band being disposed around both lips to secure the module and core together. A complementary module is secured to the first module to form the remainder of its living unit.

3,690,078

MODULAR TUBULAR-SKELETON BUILDING ADAPTED TO BE READILY ASSEMBLED AND DISASSEMBLED AND RE-ASSEMBLED

Baylor H. Maynard, Jr., Levittown, Pa., assignor to Versadome Corporation, Montgomeryville, Pa.

Filed June 24, 1969, Ser. No. 835,971
Int. Cl. E04b 1/32, 1/347
U.S. Cl. 52—86 13 Claims



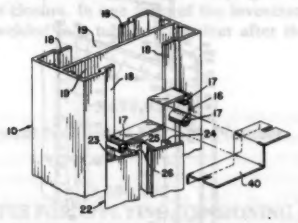
A generally semicylindrically shaped pre-fabricated modular building adapted to be readily assembled, disassembled and re-assembled, including a modular skeleton-frame and a thin limp sheathing thereover and detachably secured thereto, with each of the two halves of the frame (on opposite sides of a vertical median plane longitudinally thereof) being composed of successively higher contiguous longitudinal rows of co-planar triangles, with the planes of the successively higher rows inclined to the horizontal at successively lesser angles, such triangles being formed of horizontal module-defining base members (arranged end-to-end in straight horizontal lines) and pairs of diagonal members, and internal brace members spanning pairs of commonly-based triangles in contiguous rows and having their ends secured to the opposite apices of such pairs of triangles; the base members, diagonals and brace members being individual pieces of metallic tubing having flattened integral coupling-flanges at their ends overlapping and secured to each other in the corners of the triangles, and the coupling-flanges of the base members being at right angles thereto and extending inwardly of the skeleton-frame and arranged to cause the base members to support the sheathing out of contact with the coupling-flanges of the diagonals and of the brace members.

3,690,079

MOISTURE DEFLECTOR

James W. Hemminger, Buchanan, Mass., assignor to American Metal Climax, Inc., New York, N.Y.

Division of Ser. No. 815,633, April 14, 1969, Pat. No. 3,527,012. This application April 24, 1970, Ser. No. 43,292
Int. Cl. E04b 2/88
U.S. Cl. 52—97 2 Claims



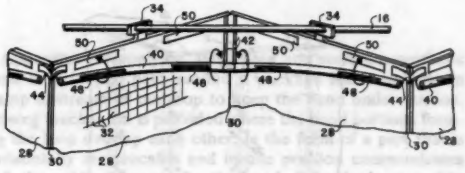
There is provided an improved moisture deflector for use in wall construction of the type including a vertical mullion defining a frame pocket and interconnected horizontal members. The horizontal members are secured to the vertical by means of a shear block attached to the vertical mullion. A filler member snaps or secures to the vertical mullion and defines a glazing pocket for glass or other panels. A moisture deflector is positioned at each end of the horizontal structure member and extends over the upper end of the glazing pocket so as to direct moisture between the frame pocket and the filler member.

3,690,080

SOLAR ARRAY WITH SELF-ERECTING, SELF-RIGIDIZING ROLL-UP SHEETS

Paul A. Dillard, Littleton, Colo., assignor to TRW Inc., Redondo Beach, Calif.

Filed Sept. 21, 1970, Ser. No. 73,758
Int. Cl. E01q 15/20
U.S. Cl. 52—108 20 Claims



A deployable panel for a spacecraft deployable solar array and other deployable structures. The panel has a number of panel sections hinged edge-to-edge for folding to a stowage configuration wherein the sections are disposed in confronting face-to-face relation and extension to a flat unfolded configu-

ration wherein the panel sections are disposed in coplanar relation. Fixed to selected edges of the panels are sheets which are held flat between the panel sections in the folded configuration of the panel and curl into tubular beams for deploying the panel to unfolded configuration and/or rigidizing the panel when the latter is extended to unfolded configuration. In a solar array the sheets provide protection covers for the solar cells when the solar panel is folded. A deployable panel structure embodying the panel.

3,690,081

Patent Not Issued For This Number

3,690,082

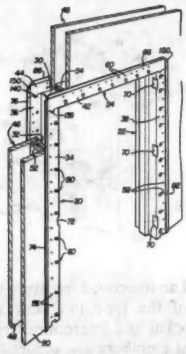
DOOR FRAME

Henry L. Byland, Lighthouse Point, Fla., assignor to Futuristic Building Products, Inc., Northbrook, Ill.

Filed Feb. 24, 1970, Ser. No. 13,331

Int. Cl. E06b *1/52, 1/34, 1/12*

U.S. Cl. 52—213 **2 Claims**



A door frame for framing an opening in a wall and including a pair of spaced stiles and a header bridging the stiles with the stiles and header each having spaced flanges fastened to the wall about the opening with fasteners, and a plurality of mold trim members retained on a continuous lip and separate tabs on each flange to cover the fasteners and provide a neat mold trim framing the door opening. The stiles and header have interlocking portions at their ends to accurately locate these parts relative to each other.

3,690,083

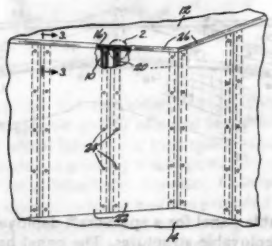
PANEL MOUNTING CONSTRUCTION

Mark A. Miller, 3575 Gordon Rd., Elkhart, Ind.

Filed Feb. 10, 1971, Ser. No. 114,254

Int. Cl. E04b *2/82*

U.S. Cl. 52—481 **10 Claims**



A panel mounting construction having a horizontal support secured to a building and having a longitudinal track adjustably supporting a plurality of members suspending uprights adapted to be secured to the building and provide spaced anchorage for self-locking securing members inserted through openings in the vertical margins of wall-forming panels. Trim members are anchored to at least the upper horizontal edges of the panels.

3,690,084

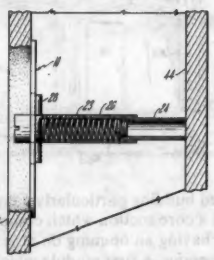
FILLER BACKING

Placide N. Leblanc, 194 Jerry Rd., East Hartford, Conn.

Filed April 12, 1971, Ser. No. 133,029

Int. Cl. E04g *23/02*

U.S. Cl. 52—514 **10 Claims**



A device for supporting patching compounds in its plastic state during the repair of holes in building walls of gypsum board construction. The backing device includes an apertured, foldable plate member which may be inserted through the hole to be patched and then erected so as to cover the hole. The invention is also characterized by a telescoping support member which passes through the aperture in the foldable plate and will retain the plate in position by acting against the plate and the inner surface of the opposing wall.

3,690,085

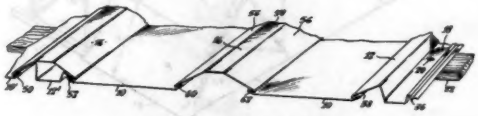
ROOFING AND SIDING SHEETS AND THE LIKE

William Cookson, Fareham, England, assignor to Cookson Sheet Metal Developments Limited

Division of Ser. No. 800,835, Feb. 17, 1969, Pat. No. 3,606,720. This application Nov. 13, 1970, Ser. No. 89,165

Int. Cl. E04d *1/06*

U.S. Cl. 52—531 **7 Claims**



A roofing sheet having wide-based ribs, a lateral male rib having means for interlocking with an overlying lateral female rib of a neighboring sheet, the male rib having a fixing channel for securing the rib to a structural member. There are also described clips to act as concealed fixings for intermediate wide-based ribs, the clips having means to engage an internal pocket or pockets in the rib.

3,690,086

WALL CONSTRUCTION

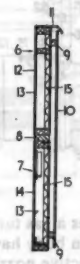
Robert Templeman Cole; Frederick John Whitbread, both of Winchester, and John Colin Downer, Chandler's Ford, all of England, assignors to Conder International Limited, Winchester, Hampshire, England

Filed June 18, 1970, Ser. No. 47,363

Claims priority, application Great Britain, June 20, 1969, 31265/69

Int. Cl. E04g *21/00*

U.S. Cl. 52—741 10 Claims



A method of erecting the whole or a portion of a building comprising erecting a temporarily weather-proof wall structure including wall members and glazing, and attaching waterproof outer cladding to the wall members so as to conceal the wall members. By attaching an outer cladding to wall members, wall members can be pre-fabricated and have larger tolerances than otherwise possible. Furthermore the appearance of walls having outer cladding is not effected by minor damage caused to wall members during transit and installation.

3,690,087

METHOD FOR PACKAGING TELEPHONE CABLE

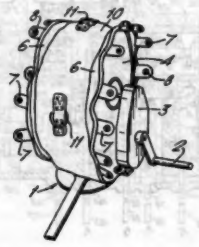
Arnulv Moe Jacobsen, Lillehammer, Norway, assignor to A/S Norsk Kabelfabrik, Drammen, Norway

Division of Ser. No. 847,838, Aug. 6, 1969, Pat. No. 3,637,071. This application Sept. 13, 1971, Ser. No. 179,857

Claims priority, application Norway, Aug. 9, 1968, 3144

Int. Cl. B65b *63/04*

U.S. Cl. 53—21 FW 6 Claims



The specification discloses a cable package or dispenser for army telephone cable, comprising a cable coil with a hollow center, two annular side members of strong, flexible material and a belt of strong, flexible material overlying the outer periphery of the coil. Holes are provided at the outer periphery of the side members, which are kept tightly together by a lacing extending through the holes and overlying the belt.

3,690,088

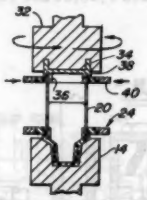
METHOD OF PACKAGING

Douglas W. Anderson, Palatine, and Dave Chapman, Chicago, both of Ill., assignors to Dave Chapman and Goldsmith & Yamasaki, Inc., Chicago, Ill.

Filed Sept. 8, 1970, Ser. No. 70,149

Int. Cl. B65b *7/28*

U.S. Cl. 53—29 12 Claims



Method an apparatus for sealably securing a plastic closure to a thin-walled flexible tube by spin-welding wherein the tube is held against the closure by resilient clamping means during rotation of the closure. In one form of the invention the closure may be welded to a tubular container after the tube is filled.

3,690,089

Patent Not Issued For This Number

3,690,090

APPARATUS FOR APPLYING, TENSIONING AND SEALING A SYNTHETIC BAND AROUND A PACKAGE

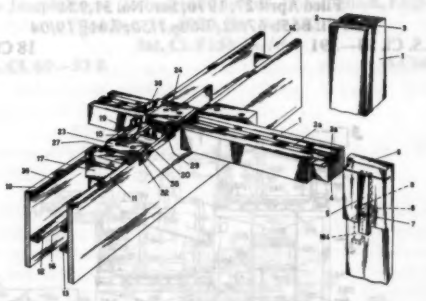
Pieter Arnoldus van de Bilt, Duinweg 24, Zeist, Netherlands

Filed Dec. 7, 1970, Ser. No. 95,686

Claims priority, application Netherlands, Dec. 10, 1969, 6918528

Int. Cl. B65b *13/04*

U.S. Cl. 53—198 R 4 Claims



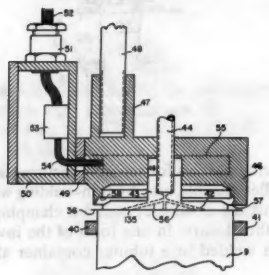
Apparatus for applying, tensioning and sealing a synthetic band in a looped path around a package has a hold-down clamp upstream of the loop to keep the band under tension. Closing mechanism is provided where the band portions forming the loop overlap each other, in the form of a part that is horizontally reciprocable and in one position communicates with the guiding passage for the band about the loop, and in another position cooperates with a vertically reciprocable sealing block which carries a cutting element. After the hold-down clamp is released and the sealing block has returned to its starting position, the horizontally reciprocable part returns to the position in which the guiding passage is connected through; and during this movement, the cutting of the band is completed.

3,690,091

METHOD FOR THE PRODUCTION OF A PACKAGE, PREFERABLY FOR DRY AND FROZEN MATERIAL

Od Wilkar Christensson, Bromma near Stockholm, Sweden, assignor to Christenssons Maskiner & Patentar Aktiebolag, Bromma near Stockholm, Sweden

Filed Aug. 20, 1970, Ser. No. 65,429
Int. Cl. B65b 7/28; B31b 1/52, 1/64
U.S. Cl. 53—42 6 Claims



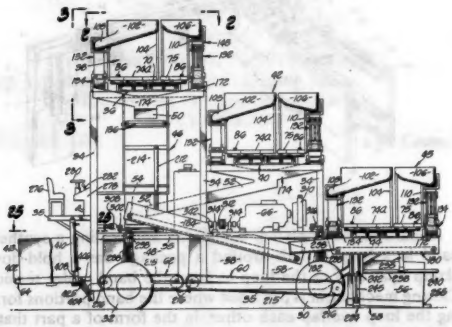
A method for forming a package having a stiff tubular base portion and flexible end closures over one or both ends. The end closure piece is engaged by a suction device mounted in and movable through a welding head, and when so held it is placed onto an open end of the base portion. The welding head then moves relative to the suction device to urge the end closure piece onto the end of the package and to heat seal the same.

3,690,092

MOBILE PLATFORM STRUCTURE FOR FRUIT PICKERS

John M. Ross, Upland, and Ronald T. Smith, Ontario, both of Calif., assignors to Sunkist Growers, Inc., Los Angeles, Calif.

Filed April 27, 1970, Ser. No. 31,924
Int. Cl. B65b 67/02; B60p 1/50; A01g 19/04
U.S. Cl. 53—391 18 Claims



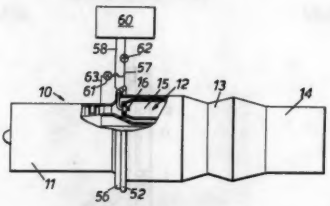
A self-propelled vehicle for travel between two rows of fruit trees has platforms for pickers at different levels that are extendable in opposite directions into the two rows of trees. Picked fruit is conveyed from the various platforms to successive field bins at a bin-filling station on the vehicle and a lift fork on the vehicle picks up empty bins as needed.

3,690,093

FUEL INJECTOR FOR A GAS TURBINE ENGINE

Dennis Richard Carlisle, Derby, England, assignor to Rolls-Royce Limited, Derby, Derbyshire, England

Filed Dec. 4, 1970, Ser. No. 95,124
Claims priority, application Great Britain, Dec. 9, 1969, 60,035/69
Int. Cl. F02c 3/22
U.S. Cl. 60—39.74 R 9 Claims



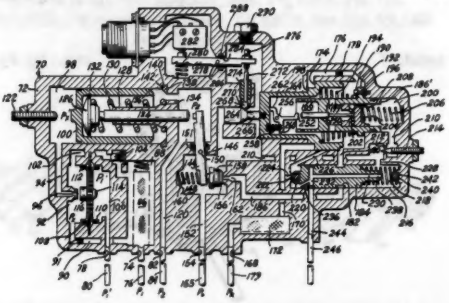
The invention comprises a gas turbine engine having a fuel injector comprising a main body having therein a plurality of ducts terminating in respective nozzles, fuel supply means for each of said nozzles, a hollow annular cowl mounted in a radially spaced relationship about the said main body so as to define therebetween an air inlet, baffle means disposed downstream of said nozzles, and valve means associated with a said duct for selectively connecting the latter to its respective fuel supply means or to a source of high pressure air, so that, in operation of the injector, the fuel, or fuel and air, emitted by said nozzles passes between said cowl and said baffle means, and simultaneously therewith a flow of high pressure air passes from the compressor stage of the gas turbine engine through said air inlet.

3,690,094

AFTERBURNER FUEL MANIFOLD FLOW SENSOR AND IGNITER CONTROL

Howard L. McCombs, Jr., 717 N. Bendix Dr., South Bend, Ind.

Filed July 15, 1971, Ser. No. 162,883
Int. Cl. F02c 7/26
U.S. Cl. 60—39.82 R 7 Claims



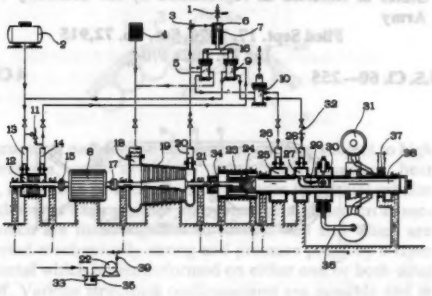
Apparatus for sensing the rate of fuel flow into an afterburner fuel manifold and energizing ignition apparatus for a predetermined time interval to ignite the after afterburner fuel flow when the manifold is filled to a predetermined extent as well as providing a simultaneous output signal to release the gates of a variable area exhaust nozzle downstream from the afterburner.

3,690,095

ROTARY ENGINE

Antonio Ignelzi, and Orlando Monari, both of Lavinio, Roma, Italy

Filed April 28, 1971, Ser. No. 138,255
Int. Cl. F02c 9/04, 3/14
U.S. Cl. 60—39.27 4 Claims



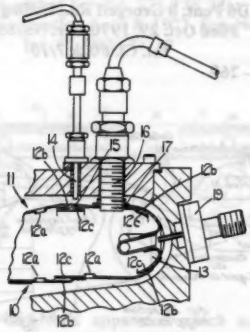
A rotary engine having reaction drive means mounted on a drive shaft in radially spaced positions. The combustible mixture is produced by the drive means and by igniting it a thrust is produced which is directed normal to the axis of the drive shaft and imparts a drive torque and thus rotary motion to the drive shaft.

3,690,096

IGNITER ARRANGEMENT FOR A GAS TURBINE ENGINE

Harry Munby, Lancashire, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Dec. 31, 1970, Ser. No. 103,130
Int. Cl. F02k 3/10
U.S. Cl. 60—39.82 P 3 Claims



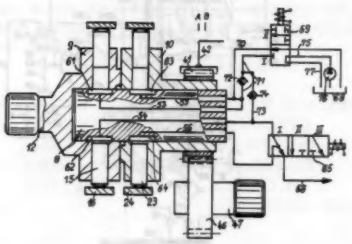
An igniter arrangement for a gas turbine engine combustion chamber has a nozzle adapted to direct a fine jet of fuel into the chamber through a port, the nozzle being spaced from the outside of the chamber wall. Air also enters the chamber through the port and the mixture is directed by a baffle towards an igniter plug in the chamber wall. In the absence of a fuel jet from the nozzle the air flow through the port serves to cool the igniter plug.

3,690,097

APPARATUS HAVING INTERCONNECTED HYDRAULIC UNITS OPERABLE AS PUMPS, HYDRAULIC MOTORS, AND AS A HYDROSTATIC TRANSMISSION

Dieter Widmaier, Feilbach, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Oct. 2, 1970, Ser. No. 77,641
Claims priority, application Germany, Oct. 3, 1969, P 19 49 973.1
Int. Cl. F16d 33/00; F01b 1/06
U.S. Cl. 60—53 B 14 Claims



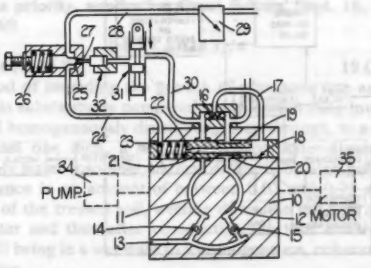
The rotors of two hydraulic radial piston units, one of which is driven by a prime mover, can be connected and disconnected by mechanical coupling means so that one, or both units pump pressure fluid to a hydraulic consumer motor, dependent on the required consumer load. A valve can be operated to hydraulically connect the units so that the driven pump unit delivers pressure fluid to the other hydraulic unit which operates as the motor of a hydrostatic transmission to rotate an output shaft.

3,690,098

CONTROL ARRANGEMENT FOR HYDRAULIC TRANSMISSION SYSTEM

Leonard William Eyles, Ormskirk, Lancs, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Dec. 31, 1970, Ser. No. 103,122
Int. Cl. F15b 15/18
U.S. Cl. 60—53 R 6 Claims

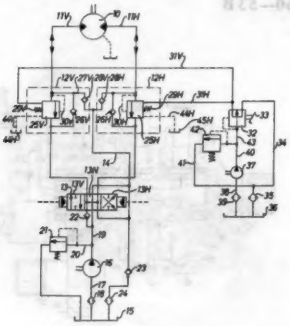


A control arrangement for a hydraulic transmission system has a relief valve which operates to interconnect the pressure and return lines of the system. The relief valve is operable by a pilot valve controlled by the pressure in the return line. Rise in return line pressure due, for example, to an external torque applied to the output shaft of the transmission system, causes the pilot valve to operate the relief valve.

3,690,099
BRAKE ARRANGEMENT FOR REVERSIBLE HYDRAULIC ENGINES

Stanislaw Sarnik, Malmo, and Mans Olof Olofsson, Asmundtorr, both of Sweden, assignors to AB Kockum Landsverk, Landskrona, Sweden

Filed May 10, 1971, Ser. No. 141,638
Int. Cl. F16d 31/06
U.S. Cl. 60—53 R 8 Claims

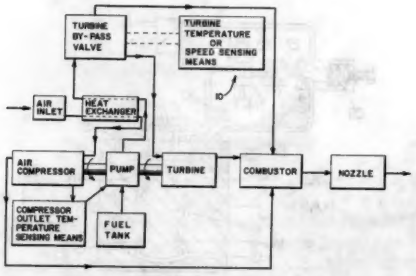


In a hydraulic system for operating a reversible hydraulic engine there is provided a directional valve by which an idling circuit for said engine may be established through inlet and outlet conduits thereof. Each of said conduits includes a throttle valve and a check valve connected in parallel to each throttle valve. The throttling action of such throttle valves is optionally controllable by the operator in order to provide a controlled braking of the hydraulic engine.

3,690,100
METHOD OF OPERATING A REACTION PROPULSION ENGINE AND FUELS THEREFOR

Robert L. Wolf, Chesterfield County, and Christopher J. Cowlin, Richmond, both of Va., assignors to Texaco Inc., New York, N.Y.

Continuation of Ser. No. 325,352, Nov. 20, 1963, abandoned, which is a continuation-in-part of Ser. No. 152,097, Nov. 13, 1961. This application June 1, 1966, Ser. No. 544,597
Int. Cl. C06d 5/00
U.S. Cl. 60—206 3 Claims

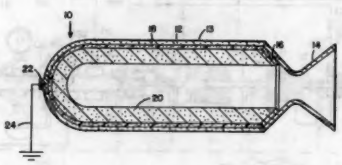


1. The method of operating a ram air reaction propulsion system comprising: directing a fuel capable of endothermically dissociating at temperatures between about 200° to 2,000° F. into indirect heat exchange between the inlet ram air of the system and said fuel to bring about the endothermic dissociation of at least a portion of the fuel by the transfer, prior to mechanical compression of the ram air, of a portion of the heat energy from the ram air of the system to the fuel prior to combustion of the fuel in the ram air; utilizing a portion of the ram air heated fuel to mechanically compress the fuel cooled ram air; burning the fuel exhausting from said further air compressing step in the said further compressed air; and thereafter expanding the combustion products through an outlet nozzle of the system.

3,690,101
GROUND FOR FIBERGLASS SOLID ROCKET MOTOR CASE

Charles L. Lynch, Rockledge, Fla., assignor to The United States of America as represented by the Secretary of the Army

Filed Sept. 17, 1970, Ser. No. 72,915
Int. Cl. F02k 9/04
U.S. Cl. 60—255 4 Claims

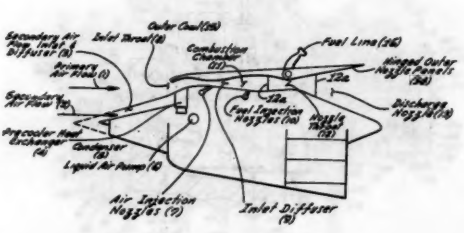


Means for grounding an electrostatic charge from within a fiberglass case of a solid propellant rocket motor are provided. The rocket motor utilizes a solid propellant grain within a fiberglass case which is provided with a metalic dome ring at the forward end of the case. A metallic aft retainer ring for the grain is positioned between the grain and an exhaust nozzle which is affixed to the aft-end of the case. The exhaust nozzle is in electrical contact with the retainer ring and the case. A conductive path to ground is established by a conductive material (e.g., conductive plastic or metallic screen) which is positioned between the propellant grain and the fiberglass case and in electrical contact with an aft-end metallic retainer ring and a forward end metallic-dome ring. The conductive path to ground is established through the fiberglass case itself by employing a conductive material (e.g., powdered carbon or powdered metal) in the epoxy resin used to coat the fiberglass threads in a filament wound fiberglass case. The outside of the motor case is coated with a conductive paint.

3,690,102
EJECTOR RAM JET ENGINE

Anthony A. Du Pont, 8 Georgeff Rd., Rolling Hills, Calif.

Filed Oct. 29, 1970, Ser. No. 85,134
Int. Cl. F02k 7/10
U.S. Cl. 60—269 3 Claims

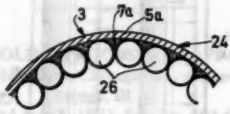


A hypersonic ram jet engine is provided which may be of the hydrogen fueled type and in which static and acceleration thrusts are provided as inherent features of the engine to accelerate the aircraft to speeds at which the ram jet engine can operate efficiently. The static and acceleration thrust is provided by the ram jet engine itself; this being achieved by injecting a secondary airflow into the engine at high pressure by the use of the engine's liquid hydrogen fuel to condense secondary air, as will be described.

3,690,103
STRUCTURAL ELEMENT CONSTRUCTION AND METHOD OF MANUFACTURING

Carl-Helmut Dederra, Ottobrunn, and Karl Butter, Munich, both of Germany, assignors to BOLKOW Gesellschaft mit beschrankter Haftung, Ottobrunn, Germany

Filed Nov. 15, 1967, Ser. No. 683,176
Int. Cl. F02k 11/02
U.S. Cl. 60—267 **5 Claims**



A structural part for use as a wall of a device subject to high temperatures, such as rocket combustion chamber, heat shield, nose cone of a missile etc., includes individual tubular form elements having either an opened or a closed cross section which are fitted together to form a wall and which are connected mechanically strong and pressure proof by a layer of material which is electroformed on either one or both sides thereof. Various structural configurations are possible and in some instances the resultant structure is reinforced by a reinforcing member such as a steel strip.

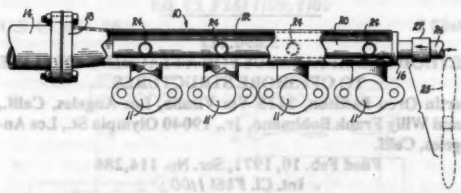
In the method of the invention, structural parts which are adapted to be liquid cooled are formed of small tubular elements which are arranged together and thereafter the cracks or joints between the elements are filled with a filling material which has an electrically conductive surface and subsequently a mechanically strong and pressure proof layer is electroformed over the wall formed by the tubular elements and the filling material. In some instances, the filling materials are fused out to leave the interiors void.

3,690,104
Patent Not Issued For This Number

3,690,105
AFTER BURNING DEVICE FOR INTERNAL COMBUSTION ENGINES

Bonnie G. Faulkner, 15818 Beechwood, Ivanhoe, Calif.

Continuation-in-part of Ser. No. 725,728, May 1, 1968, abandoned. This application April 8, 1971, Ser. No. 132,488
Int. Cl. F02b 75/10
U.S. Cl. 60—283 **8 Claims**



This disclosure described apparatus which substantially reduces the uncombusted hydrocarbons in the exhaust gases from an internal combustion engine by causing further combustion in the manifold of the engine adjacent the cylinder exhaust valves. The further combustion is derived by injecting additional oxygen into contact with the hot exhaust gases. The oxygen is injected by means of a supply tube inserted coaxially in the manifold collection chamber with venturi ports which draw in air from the outside. In alternate forms, air is drawn from the engine oil pan area through the oil breather cap, and from both the atmosphere and the oil pan area, simultaneously.

3,690,106
METHOD OF TREATING PERMEABLE FORMATIONS

Rhoderio Tregembo, Grants, N. Mex.; Wayne R. Dolezal, Grants, N. Mex.; Lowell D. Boughton, Tulsa, Okla., and John D. Stewart, Littleton, Colo., assignors to the Dow Chemical Company, Midland, Mich., and Kern-McGee Corporation, Oklahoma City, Okla.

Filed Feb. 24, 1970, Ser. No. 13,452
Int. Cl. E02d 3/12
U.S. Cl. 61—36 **16 Claims**

A method is provided for grouting zones of permeable geologic formations to prevent the flow of fluid through the grouted zone. In this method the formation is penetrated by a borehole. A blasting agent is disposed in the borehole contiguous to the zone to be grouted. The blasting agent is detonated to provide fractures in the zone of the formation which extend radially away from the borehole. The fractures are grouted to prevent the flow of fluid through the grouted zone.

3,690,107
METHOD OF IMPEDING THE GROWTH OF PLANTS ON NON-AGRICULTURAL SOILS

Thale Dolfing, Winschoten, and Jan Lolkema, Hoogezand, both of Netherlands, assignors to Lolkema Scholten Honig Research N.V., Foxhol, Netherlands

Filed Sept. 9, 1970, Ser. No. 70,918
Claims priority, application Great Britain, Sept. 16, 1969, 45,480/69
Int. Cl. E02d 3/14
U.S. Cl. 61—36 R **19 Claims**

Method of impeding the growth of plants on non-agricultural soils substantially completely by incorporating into said soils and homogeneously distributing therethrough, to a depth of at least one inch, a water-soluble or water-dispersible, preferably water-insoluble, natural or synthetic high polymeric substance in an amount of between 0.03 and 0.75 weight percent of the treated soil, wetting down the soil thoroughly with water and thereafter compacting the thus treated soil while still being in a wet state to a homogeneous, coherent and dense mass.

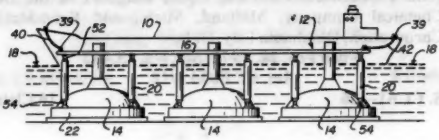
3,690,108
STABLE OFFSHORE STRUCTURES

William A. Tam, Westmont, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed June 15, 1970, Ser. No. 46,403
Int. Cl. E02b 3/22; B63b 43/18
U.S. Cl. 61—46 **10 Claims**

Stable offshore structures especially suitable for use ad-

jacent undersea storage facilities are provided having a horizontally extending buoyant member pivotally interconnected by universal joint means with stable sub-surface anchoring means by vertically extending support means.



3,690,109

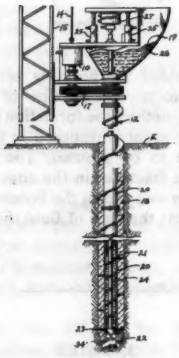
METHOD AND MEANS FOR PRODUCING PILE OR LIKE STRUCTURAL COLUMNS IN SITU

Lee A. Turzillo, 2078 Glengary Rd., Akron, Ohio

Filed March 16, 1970, Ser. No. 19,906

Int. Cl. E02d *5/34, 5/56;* **E02b** *11/00*

U.S. Cl. 61—53.64 **15 Claims**



Pile or like structural column produced in earth situs by drilling with continuous flight auger to define cavity of requisite depth, withdrawing auger by successive incremental extents and maintaining auger affixed against axial movement at top of each said extent while feeding and compacting column-forming material, through hollow shaft of auger, into each respective cavity extent, until series of successively formed extents produce integrated column. Closure on inner end of hollow auger shaft operable to stop flow of material at any depth of cavity. For forming concrete pile, closure means operable to form enlarged base or bulb of self-hardening material at bottom of cavity to increase load-bearing capacity of the formed pile.

3,690,110

REPAIRING OR REHABILITATING STEEL SUPPORTED H-PILES

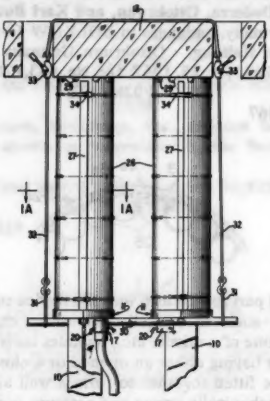
George C. Wiswell, Jr., 1014 Pequist Rd., Southport, Conn.

Filed April 9, 1970, Ser. No. 26,962

Int. Cl. E02d *5/40, 5/60*

U.S. Cl. 61—54 **7 Claims**

In order to apply reinforced concrete to a portion of a steel pile, a reinforcing cage is attached to the pile surrounding that portion and is enclosed by a two-piece cylindrical form pulled tightly upwardly against the undersurface of the pile cap and having its lower end closed by a bottom plate. Concrete is pumped upwardly through the bottom plate to displace the water within the form.



3,690,111

OFFSHORE PIPELINE INSTALLATION METHOD

Jamie F. Matthews, Jr., Houston, Tex., assignor to Esso Production Company

Filed Feb. 9, 1971, Ser. No. 113,926

Int. Cl. F16l *1/00;* **B63b** *35/04*

U.S. Cl. 61—72.3 **12 Claims**

An underwater pipeline is installed by lowering it to the bottom of the water from the stern of a lay barge as the barge advances along a long preassembled pipeline section which floats near the surface of the water and is held in tension by a second vessel positioned in front of the lay barge. An additional floating section is connected in place when the lay barge reaches the end of the initial section, this additional section is held in tension by the second vessel, and laying of the line is continued as the lay barge advances.

3,690,112

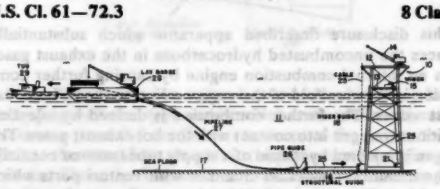
METHOD AND APPARATUS FOR ATTACHING PIPELINE TO OFFSHORE STRUCTURES

Martin Oren Pattison, 2115 Via Visalia, Los Angeles, Calif., and Willy Frank Bohlmann, Jr., 19040 Olympia St., Los Angeles, Calif.

Filed Feb. 10, 1971, Ser. No. 114,286

Int. Cl. F16l *1/00*

U.S. Cl. 61—72.3 **8 Claims**



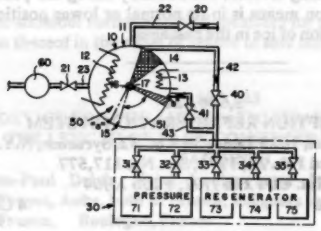
A pipe guidance system is attached to an offshore structure. A remote pipe guide connected to a pipeline being laid un-

derwater is pulled to and properly positioned adjacent the offshore structure by means of the pipe guidance system. A riser pipe is guided to a position for connection to the pipeline by means of a riser guide which is also attached to the offshore structure. Then the pipeline and riser pipe are connected together. The pipe guidance system includes at least one pulley connected to the offshore structure and a cable arranged about the pulley. One end of the cable is connected to power means for applying a pulling force on the cable and the other end is connected to the pipe guide.

3,690,113
GAS COOLING PROCESS AND APPARATUS

Raghunath G. Mokadam, Chicago, Ill., assignor to Institute of Gas Technology, Chicago, Ill.

Filed Jan. 5, 1971, Ser. No. 104,008
Int. Cl. F25b *9/00*
U.S. Cl. 62—6 **17 Claims**

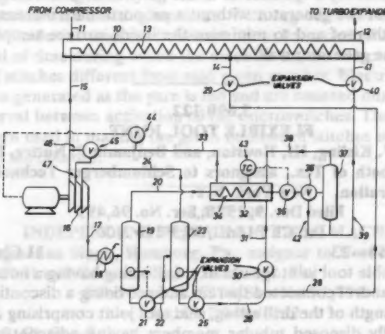


A cyclic gas cooling apparatus and process comprising a thermal compressor and thermal regenerative means in communication with a pressure regenerative means which produces, by a combination of thermal compression and thermal regeneration and pressure regeneration of the working gas introduced into and contained in said thermal compressor and thermal regenerative means, a decrease in the temperature of the gas. Such gas is then introduced into a surrounding confined space or brought into contact with an object at a higher temperature where its low temperature will result in a cooling effect.

3,690,114
REFRIGERATION PROCESS FOR USE IN LIQUEFICATION OF GASES

Judson S. Swearingen, 500 Bel Air Rd., Los Angeles, Calif., and Sham Sunder, 2235 Carmelina Ave., Los Angeles, Calif.

Filed Nov. 17, 1969, Ser. No. 877,116
Int. Cl. F25j *1/00, 1/02*
U.S. Cl. 62—40 **5 Claims**

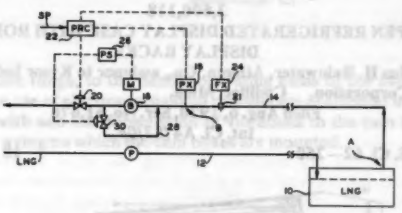


A refrigeration process for use in the liquefication of gases wherein a gaseous mixed refrigerant is compressed to form a mixture of a gas difficult to condense and a liquid, at least a portion of a liquid, after reduction to a lower pressure is used to effect cooling and condensation of substantially all of the gas, the condensed gas after reduction to lower pressure is employed as a low temperature refrigerant in the cold end of an exchanger and the remaining portion of said liquid is employed as a high temperature refrigerant in an intermediate stage of said exchanger. The process is used to supply the mechanical refrigeration needed in a turboexpansion system for the liquefication of natural gas and the like.

3,690,115
CONTROLLING PRESSURE IN FLUID TRANSFER CONDUITS

Hadwen A. Clayton, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Nov. 2, 1970, Ser. No. 86,155
Int. Cl. F17c *13/02*
U.S. Cl. 62—49 **11 Claims**

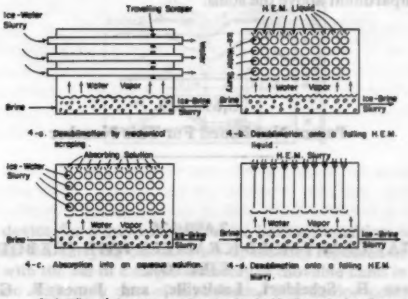


The pressure at a downstream point in a conduit through which a fluid is flowing is controlled so as to maintain the pressure at an upstream point in the conduit substantially constant. Said control is effected by measuring the pressure and flow rate at said downstream point, and adjusting said pressure in accordance with the measured pressure and measured flow rate.

3,690,116
FREEZING PROCESS WITH A LOW PRESSURE ICE-MAKING AND A HIGH PRESSURE ICE-MELTING OPERATION

Chen-Yen Cheng, 920 Moro St., Apt. 2, Manhattan, Kans., and Sing-Wang Cheng, No. 83, Chang-an East Rd., Sect. 1, Taipei, China /Taiwan

Filed Dec. 6, 1967, Ser. No. 688,404
Int. Cl. B01d *9/04*
U.S. Cl. 62—58 **6 Claims**



The present invention relates to freezing processes, each one of which consists of a low pressure ice-making operation and a high pressure ice-melting operation. In the low pressure freezing step, water is flash vaporized from an aqueous solution under a vacuum to simultaneously produce ice crystals.

The low pressure water vapor at pressures below triple point is either desublimed to form solid ice or absorbed into an aqueous solution at a temperature lower than 0° C. The separated ice crystals are melted under a high pressure to lower its melting point sufficiently so that the melting temperature becomes lower than the temperature at which the low pressure water vapor is either desublimed or absorbed in an aqueous solution. The low pressure water vapor and the separated ice crystals are in indirect heat exchange relation during these operations so that the heat released in the desublimation or absorption operation is utilized in the melting of ice crystals. The low pressure water vapor may also be brought into direct contact with a heat exchange medium which is at least partly in solid state to thereby simultaneously convert the water vapor into solid ice and melt the heat exchange medium.

3,690,117

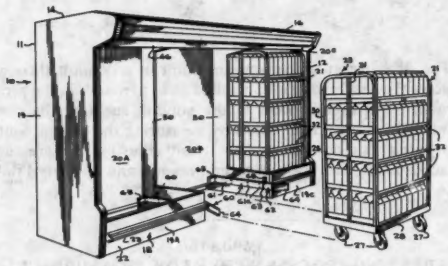
Patent Not Issued For This Number

3,690,118

OPEN REFRIGERATED DISPLAY CASE WITH ROLL-IN DISPLAY RACKS

Julius H. Rainwater, Atlanta, Ga., assignor to Kysor Industrial Corporation, Cadillac, Mich.

Filed Aug. 6, 1970, Ser. No. 61,676
Int. Cl. A47f 3/04
U.S. Cl. 62—250 **18 Claims**



An open front refrigerated display case for storage and display of products on mobile rack carts, wherein a top wall, vertical end and rear walls, and interior divider walls paralleling the end walls define plural forwardly opening bays or stalls into which the rack carts may be rolled along the store floor. Removable lower front wall sections spaced forwardly of the carts in the stalls define air inlet ducts for leading return air beneath the carts into a rear return duct and to a refrigeration compartment above the stalls.

3,690,119

Patent Not Issued For This Number

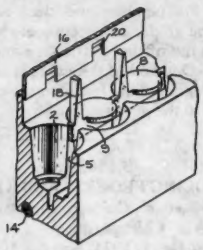
3,690,120

STATIONARY MOLD ICE MAKER WITH THE BOTTOM EJECTOR

Owen H. Scheldorf, Louisville, and James F. Gordon, Anchorage, both of Ky., assignors to General Electric Company

Filed June 1, 1971, Ser. No. 148,787
Int. Cl. F25c 1/04
U.S. Cl. 62—353 **6 Claims**

An ice maker comprising a mold containing a plurality of longitudinally spaced cavities connected by vertical passages and a vertically movable ejection means including a member extending through the passages. The ejection means includes



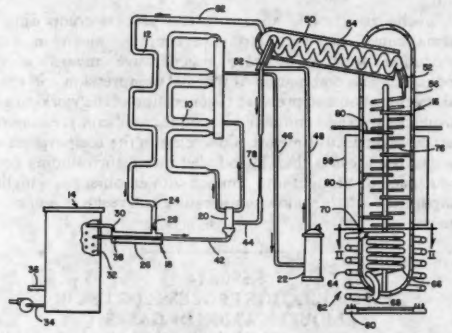
upwardly extending dividers substantially filling the passages when the ejection means is in its normal or lower position to limit the formation of ice in the passages.

3,690,121

ABSORPTION REFRIGERATION SYSTEM

Jashwant D. Patel, 1025 James St. Apt. 32, Syracuse, N.Y.

Filed Feb. 22, 1971, Ser. No. 117,577
Int. Cl. F22b 1/02; F25b 15/04
U.S. Cl. 62—476 **4 Claims**



An absorption refrigeration system employing a generator having a heat pipe associated therewith to transfer heat from a suitable burner to the interior of the generator to increase the capacity of the generator without a proportionate increase in the size thereof and to minimize the inside surface temperature of the generator wall.

3,690,122

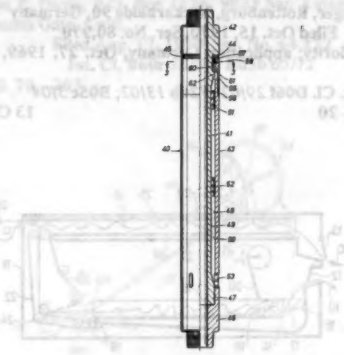
FLEXIBLE TOOL JOINT

James W. Kisling, III, Houston, and Benjamin P. Nutter, Bellville, both of Tex., assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Dec. 9, 1970, Ser. No. 96,499
Int. Cl. F16d 3/06; F21b 1/06
U.S. Cl. 64—23 **11 Claims**

A flexible tool joint for use in a drill string having a housing and a mandrel connected therein and providing a discontinuity in strength of the drill string, said tool joint comprising concentrically disposed tubular members having adjacent ends adapted for connection to the drill string, the inner one of said members having its other end adapted for connection to said mandrel, said members being laterally spaced throughout a

substantial portion of their lengths so that said inner member can bend independently of said outer member, and coengageable shoulder surfaces on said members for preventing separation thereof in the event of failure of said inner member.



3,690,123

DEVICE FOR THE AUTOMATIC MEASUREMENT OF THE LENGTH OF YARN CONSUMED IN KNITTING MACHINES

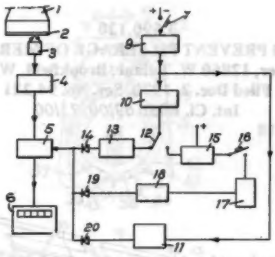
Jean-Paul Delair, Saint Loubes, and Jean-pierre Raisin, Troyes, Aube, both of France, assignors to Institut Textile de France, Boulogne, France

Filed March 9, 1970, Ser. No. 17,491

Claims priority, application France, March 17, 1969, 6907568

Int. Cl. D04b 9/00, 15/38, 11/00

U.S. Cl. 66—1 R 9 Claims



The invention relates to a method of and device for displaying the length of yarn used in making a given number of stitches on a knitting machine. With regard to the dimensions of the device microswitches are set to be activated at an interval of time during which the machine knits a selected number of stitches different from said given number. Electrical pulses are generated as the yarn is fed and are counted during the interval between activation of the microswitches. The length of yarn used in making the given number of stitches is displayed on the counter.

3,690,124

INDEPENDENT NEEDLE KNITTING MACHINES

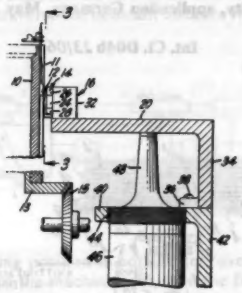
Jagmohan Singh, Hamburg, Pa., assignor to North American Rockwell Corporation, Pittsburgh, Pa.

Filed Nov. 23, 1970, Ser. No. 91,772

Int. Cl. D04b 15/32

U.S. Cl. 66—8 5 Claims

The invention is directed to means for reducing the friction load between the butts of the needles and the needle operating cams of independent needle knitting machines and also for reducing the friction load between the needles and the sinkers of such machines and the yarn knitted thereby. Such reduction of frictional loads is achieved by applying high frequency vibrations or oscillations, suitably in the high sonic to the ultrasonic range, to the needle operating cams of the machine by the use of electromechanical transducers positioned in contact with and for transmission of vibrations to the cam boxes or to a ring on which the cam boxes are mounted.



3,690,125

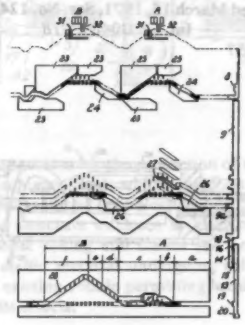
DEVICE FOR A MULTI-FEED CIRCULAR KNITTING MACHINE

Riccardo Tenconi, Via della Tallera 19, Varese, Italy

Filed June 11, 1970, Ser. No. 45,334

Int. Cl. D04b 9/18

U.S. Cl. 66—42 2 Claims



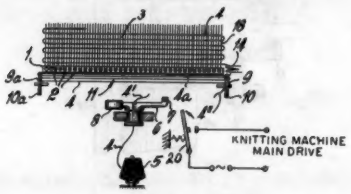
A device for a multi-feed circular knitting machine, which permits the carrying out of fancy operations repeated at each feed with the aid of a single assembly of movable cams in connection with only one of said feeds. The device comprises jacks raised and lowered by common selection cams and lower jacks raised by cooperation with said jacks. The lower jacks have at their lower end a foot cooperating with a control ledge arranged on the needle cylinder in order to cause the lower jacks to project with a butt opposite to the foot and to engage with cam means provided for carrying out the fancy operation on the fabric.

3,690,126

METHOD OF OPERATING A WARP KNITTING MACHINE

Walter Reiners, and Albert tho Pesch, both of 4050 Monchengladbach, Germany, assignors to W. Schlafhorst & Co., Monchengladbach, Germany

Filed May 14, 1971, Ser. No. 143,488
Claims priority, application Germany, May 16, 1970, P 20 24 087.3
Int. Cl. D04b *23/06*
U.S. Cl. 66—84 3 Claims



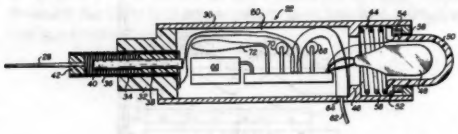
Method of operating a warp knitting machine includes, after interruption of a weft running to the weft storage and after shut-down of the machine, severing the drive connection between the weft storage and the knitting instruments, removing the length of weft extending from the break thereof to the weft storage, thereafter placing the weft storage in filling position, automatically refilling the weft reserve remaining in the weft storage, and restoring the drive connection between the weft storage and the knitting instruments so as to resume the knitting process.

3,690,127

DEFECTIVE LATCH NEEDLE DETECTOR AND CONTROL NETWORK THEREFOR

Edward M. Tellerman, East Rockaway, and Jose Castillo Deniega, Elmhurst, both of N.Y., assignors to Stop-Motion Devices Corporation, Plainview, N.Y.

Filed March 15, 1971, Ser. No. 124,321
Int. Cl. D04b *35/18*
U.S. Cl. 66—157 23 Claims



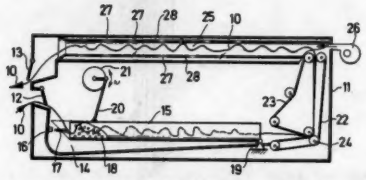
Means for detecting defective latch needle condition in a knitting machine wherein an electrically non-conductive feeler is mounted in the path of movement of the needles so as to be deflected by any latches in defective condition. The feeler is insulatingly carried by a coil having a core mounted therewithin and insulated therefrom. The core and coil define a normally open electrical switch which is closed when the feeler is deflected by a defective latch needle. A control network is provided and is responsive to the closing of the switch for interrupting the energization of the drive means for the knitting machine. The control network provides sufficient power for lighting as many detector lamps as are activated at one time, while still providing the requisite power for interrupting the energization of the knitting machine drive means.

3,690,128

APPARATUS FOR CONTINUOUSLY TREATING TEXTILE MATERIAL

Erwin Biesinger, Rottenburg, Neckarhalde 90, Germany

Filed Oct. 15, 1970, Ser. No. 80,970
Claims priority, application Germany, Oct. 27, 1969, P 19 53 960.7
Int. Cl. D06f *29/02*; F26b *13/02*; B05c *3/04*
U.S. Cl. 68—20 13 Claims



A flat or tubular textile web is transported in a loose random condition through a tunnel by stream of a chemical treating fluid, such as a cleaning fluid, by which the web is treated and cleaned before being transported by an elastic conveyor to a second tunnel in which the web is transported in the loose random condition by streams of drying air. Drive means dip the tunnel into a bath of the treating liquid in a container.

3,690,129

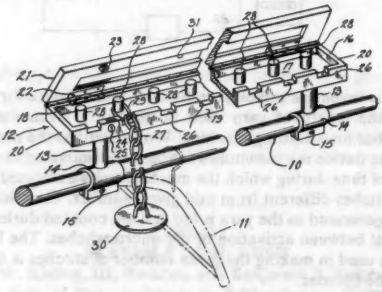
Patent Not Issued For This Number

3,690,130

DEVICE TO PREVENT PILFERAGE OF MERCHANDISE

Betty J. Eutzler, 12860 W. Tulane, Brookfield, Wis.

Filed Dec. 2, 1970, Ser. No. 94,221
Int. Cl. E05b *69/00*, *73/00*
U.S. Cl. 70—18 8 Claims

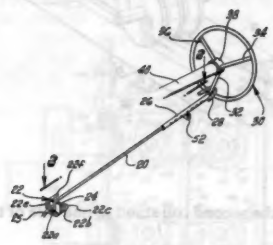


A retainer box with a lockable cover has a row of pegs therein and has a slotted front wall whereby, when the cover is open, the link at one end of a chain may be passed through a slot and slipped over a peg to be locked to the box when the cover is closed. When used with a garment rack the other end of each chain passes through a buttonhole and has a stop element such as a button thereon which is sufficiently large to prevent withdrawal.

3,690,131
AUTOMOBILE LOCKING DEVICE

Gordon E. Davis, P.O. Box 1128, 9823 San Antonio St., Apt. E, South Gate, Calif.

Filed Aug. 17, 1970, Ser. No. 64,172
Int. Cl. B60r 25/02; E05b 65/12
U.S. Cl. 70—203 7 Claims

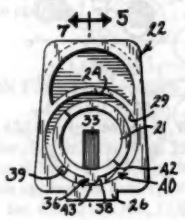


A steering wheel locking device for an automobile which includes an adjustable telescoping center rod section having a V-shaped end adapted to hook tightly around a steering wheel rim and connected spoke. The other end of the device has a U-shape adapted to securely engage a brake pedal so as to rigidly lock the steering wheel in place.

3,690,132
LOCK PLUG SHELL

George L. Engstrom, 3558 Tyler St., N.E., Minneapolis, Minn.

Continuation of Ser. No. 877, Jan. 6, 1970, abandoned. This application Jan. 8, 1971, Ser. No. 105,118
Int. Cl. E05b 9/02
U.S. Cl. 70—373 8 Claims



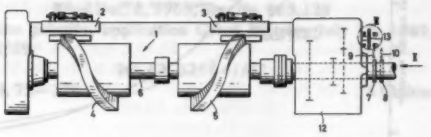
A lock plug shell providing an unlatching button for push button equipped door latches. The shell is of hard flexible resilient material and includes a cam engagable with and displaced by the retaining lug of a cylinder lock plug during movement of the lock plug toward its normal operating position in the shell, the shell having sufficient resilience to dispose a portion of the cam in a position to prevent accidental removal of the lock plug from the shell when the lock plug is moved to its operating position in the shell.

3,690,133
METHOD OF CONTROLLING A MACHINE TOOL OPERATED AT DIFFERENT WORKING SPEEDS AND CONTROL SYSTEM FOR PERFORMING THE SAME

Arnold Hilgers, Eschweiler, Germany, assignor to Schumag Schumacher Metallwerke GmbH, Aachen, Germany

Filed June 17, 1970, Ser. No. 46,995
Claims priority, application Germany, June 18, 1969, P 19 30 700.7
Int. Cl. B21c 1/30
U.S. Cl. 72—19 23 Claims

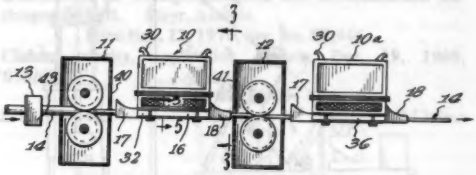
Method of controlling a machine tool operating at different working speeds includes triggering, by a fixed time interval, that is the same at all working speeds and is a characteristic of the machine too, the start of an operating cycle of the machine tool each time a moving element of the machine tool reaches a given starting position that is the same at all working speeds; the triggering being preceded and controlled by an activating switching step each time the element reaches a given activating position spaced at a constant distance from the starting position thereof and selected so that the total time required by the element to traverse the constant distance from the activating to the starting position is not shorter, even at maximum working speed of the machine tool, than the fixed time interval; and interposing between the activating and triggering steps, when the total time exceeds the fixed time interval at a particular working speed, an additional time interval depending upon the particular working speed and equal to the difference between the total time and the fixed time interval; and control system for performing the method.



3,690,134
APPARATUS FOR CONFINING COBBLES

Edmund J. Valonis, Homewood, Ill., assignor to Inland Steel Company, Chicago, Ill.

Filed May 8, 1970, Ser. No. 35,634
Int. Cl. B21c 51/00; B21b 21/00
U.S. Cl. 72—37 8 Claims



Method and apparatus for the protection of rolling mill personnel and machinery and which localizes and confines wrecked metallic material (cobbles) and facilitates removal thereof. A rigid structure encloses at least part of the line between successive rolling mill stands and confines cobbles therewithin. Metallic material undergoing rolling is sheared upstream of an existing cobble permitting localization of both the cobble and its effects.

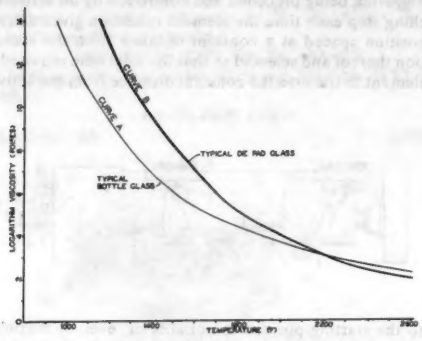
3,690,135
DIE PAD FOR EXTRUDING HOT METALS

Lawrence Vincent Gagin, and Glenn Ralph Hull, both of Toledo, Ohio, assignors to Johns-Manville Corporation, New York, N.Y.

Filed April 16, 1970, Ser. No. 29,089
Int. Cl. B21c 23/32
U.S. Cl. 72—42 10 Claims

A die pad for lubricating an extruding die as a metal billet is extruded therethrough comprising felted glass fibers. Particularly advantageous results are achieved with glasses which soften and melt in a narrow range of temperatures near the extrusion temperatures. Omission of organic binders and avoidance

of undesirable side effects is possible with felted fibers. Densities in the pads of from 3 to 20 pounds per cubic foot have



been employed depending upon the amount of lubricating glass required and the pad thickness acceptable.

3,690,136

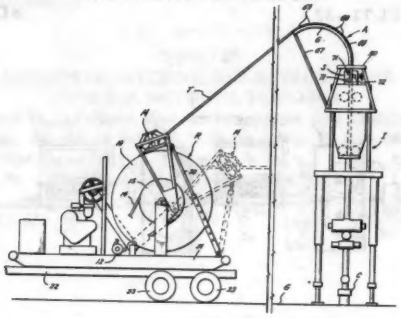
WELL TUBING GUIDE AND STRAIGHTENER APPARATUS

Damon T. Slator, and Archie R. Wilson, both of Houston, Tex., assignors to Bowen Tools, Inc.

Filed Oct. 27, 1970, Ser. No. 84,438

Int. Cl. B21d 7/08

U.S. Cl. 72—160 **6 Claims**



A well tubing guide and straightener apparatus for positioning between a reel and a tubing injector for feeding tubing from the reel to the injector, and vice versa, with a change in direction thereof and with a limited amount of permanent deformation of the tubing.

3,690,137

ROLL FORMING OF SHEET METAL

William Cookson, Fareham, England, assignor to Cookson Sheet Metal Developments Limited, Southampton, England

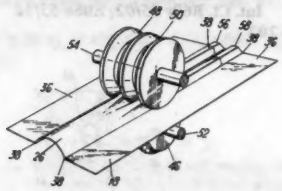
Filed June 17, 1970, Ser. No. 47,026

Claims priority, application Great Britain, June 20, 1969, 31,280/69

Int. Cl. B21d 5/16

U.S. Cl. 72—180 **8 Claims**

Method and apparatus for forming sheet metal to a desired profile in draw forming rolls in which in a first roll stand an easily drawn curved initial rib is produced and in a second roll stand the rib is reshaped, for example into a pair of ribs. The method is repeated to one or both sides of the initial deformation to make further profiles, at least one further initial rib



being formed in the second roll stand to one side of the first initial rib.

3,690,138

PROCESS AND APPARATUS FOR STRETCH FORMING METAL

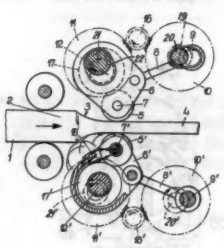
Hans Weber, Duisburg, Germany, assignor to Demag Aktiengesellschaft, Duisburg, Germany

Continuation of Ser. No. 734,591, June 5, 1968, abandoned. This application Nov. 19, 1970, Ser. No. 91,209

Claims priority, application Germany, July 23, 1967, D 53416

Int. Cl. B21b 1/42

U.S. Cl. 72—189 **7 Claims**



A device for stretch forming a metal particularly a steel piece which is still in the hot or cold working range and whose texture shows a casting or rolling structure comprises a support which carries a working roller and which is located on a respective side of the workpiece to be moved backwardly and forwardly therealong in a deformation path. The support is articulated by a thrust rod which is driven from a drive disk or shaft to which it is eccentrically connected in order to produce a reciprocating motion of the support. The support carries a shaft which eccentrically carries an eccentric disk which is rotated through an intermediate roller which is in contact with the drive disk. The eccentric disk moves around with its shaft to revolve the support with the working roller in respect to the workpiece.

The process of the invention is characterized by moving the working roller over a length of the deformation working path on a reducing surface of the workpiece and with varying velocity of the workpiece and with an adjustable movement of the working roller which is produced by the driving connection of its support. The movement is a swinging movement back and forth and a revolving movement is advantageously performed by single working rollers upon respective sides of the workpiece.

3,690,139

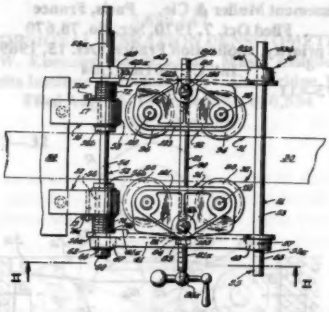
EDGE CONDITIONING MECHANISM

Francis P. Brennan, 1057 Rolling Dr., Lisle, Ill.

Continuation-in-part of Ser. No. 754,231, Aug. 21, 1968, Pat. No. 3,587,275. This application Nov. 13, 1969, Ser. No. 876,336

Int. Cl. B21b *31/00, 39/00*

U.S. Cl. 72—199 13 Claims



Edges of strip material are conditioned by an apparatus including two sets of opposed roller means pivotally mounted on respective side frame members adjustable toward and away from each other on transversely extending bars. Adjustment is effected by rotation of a bar threadedly engaging the side plates. One end of the apparatus is attached to a support usually a standard coil straightener common to most operations processing coil stock. The apparatus is counterbalanced in a free-floating position between a coil of material and the machine straightening the coiled material, whereby the stock material passing through the feed guide will automatically regulate the attitude of the apparatus with respect to its feed angle and lock it in position.

3,690,140

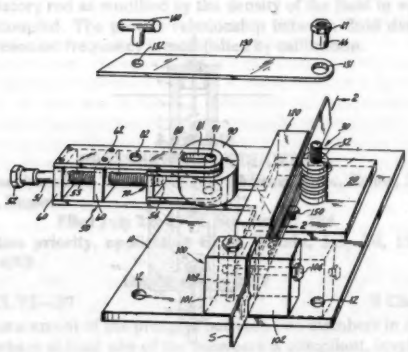
COMBINATION TUBE FORM BEND AND INFLATION APPLICATION

Richard A. Shive, 422 Serring, Madison, Ill.

Continuation of Ser. No. 823,219, Feb. 25, 1969, abandoned, which is a division of Ser. No. 709,636, March 1, 1968, Pat. No. 3,545,394. This application Feb. 1, 1971, Ser. No. 111,691

Int. Cl. B21d *1/00, 53/02*

U.S. Cl. 72—293 11 Claims



An apparatus for embossing and bending metal strip having a pattern of stop-weld material sandwiched within it, with at least a portion of the stop-weld material corresponding to at least one inflatable fluid passageway. The apparatus comprises a spindle whose operative surface is contoured to provide the desired bend radius. The apparatus further includes means for embossing the strip and means for bending the strip about the spindle. Alternative embodiments include the use of a rubber spindle and combined means for bending and embossing the strip.

3,690,141

TAPER-EXPANDING MANDREL

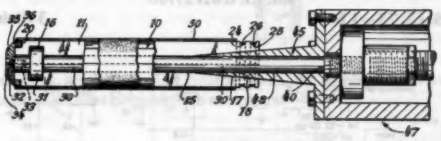
Thomas Duncan Brownbill, Uxbridge, England, assignor to John Dale Limited, London, England

Filed Dec. 8, 1969, Ser. No. 883,129

Claims priority, application Great Britain, July 18, 1969, 36,371/69

Int. Cl. B21d *41/02*

U.S. Cl. 72—370 6 Claims



The present disclosure relates to taper-expanding mandrels and in particular taper-expanding mandrels suitable for flaring or tapering collapsible tubes to permit stacking of one tube within another. The mandrel includes a plurality of discrete longitudinal segments defining a generally cylindrical mandrel surface with hinge means at one end. Expansion means urges the segments outwardly about the hinge means to define a taper to shape a tubular workpiece placed over the mandrel.

3,690,142

SWAGING MACHINE FOR A CONTINUOUS SWAGING OF ROD-SHAPED WORKPIECES

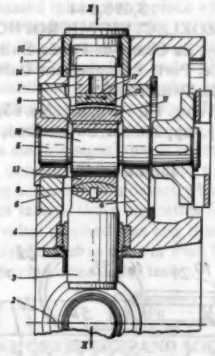
Gottfried Blaimschein, Steyr, Austria, assignor to GFM Gesellschaft fur Fertigungstechnik und Maschinenbau Aktiengesellschaft, Steyr, Austria

Filed Nov. 12, 1970, Ser. No. 88,946

Claims priority, application Austria, Dec. 19, 1969, 11818/69

Int. Cl. B21j *9/06*

U.S. Cl. 72—402 2 Claims



The hammers of a swaging machine, which extend radially to the axis of the feeding path of a workpiece, are driven by eccentric shafts parallel to this path. Each hammer is slidably guided in the longitudinal direction thereof, and elliptic chucks transform the rotation of the shafts into a radial swaging motion of the hammers to and from the feeding path and into an oscillating rocking motion in a plane defined by the axes of the feeding path and the associated shaft. Each chuck

comprises a spider rigid with the associated hammer, a cylindrical link surrounding the eccentric of the associated shaft, a first guiding element carried by the spider, a second guiding element carried by the link, meshing helical teeth on the guiding elements, and the second guiding elements being held against displacement parallel to the shafts.

3,690,143

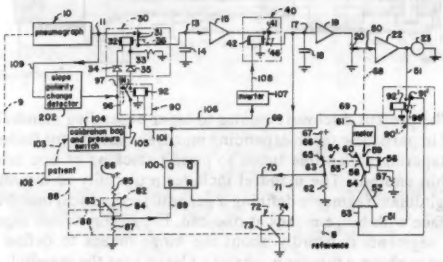
SELF CALIBRATING TIDAL VOLUME IMPEDANCE PNEUMOGRAPH

Christopher C. Day, Newtonville, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Continuation-in-part of Ser. No. 28,442, April 14, 1970, Pat. No. 3,678,296, and a continuation-in-part of Ser. No. 25,353, April 3, 1970, Pat. No. 3,677,261. This application Nov. 27, 1970, Ser. No. 93,068

Int. Cl. G01l 27/00

U.S. Cl. 73—1 R 3 Claims



A method of automatically calibrating an electronic respiration monitoring system including a pneumograph responsive to changes in thoracic inpedance of a breathing patient for providing an analog signal proportional to breath volume and a volume-calibrated inflatable bag. The method comprises the steps of: (a) operatively associating the pneumograph with the thorax of the patient; (b) positioning said bag in association with the patient with the bag being arranged to capture gases exhaled by the patient; (c) determining maximum filling of said bag; and (d) automatically calibrating said system upon the filling of the bag.

3,690,144

PIEZOELECTRIC MICROPHONE

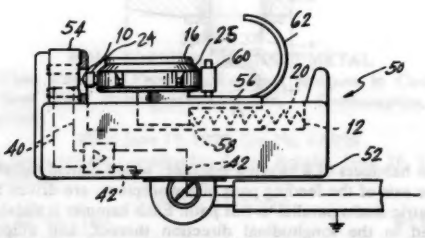
Jean-Pierre Bonny, La Chaux-de-Fonds, Switzerland, assignor to Portescop, Le. Porte-Echappement Universal S.A., La Chaux-de-Fonds, Switzerland

Filed Aug. 14, 1970, Ser. No. 63,710

Claims priority, application Switzerland, Aug. 27, 1969, 13101/69

Int. Cl. G04d 7/00

U.S. Cl. 73—6 12 Claims



In a device for inspecting watch movements, a piezoelectric contact microphone is supported for engagement with the stem of a watch movement which is urged into axial engagement with the piezoelectric element of the microphone to transmit the vibrations of the watch movement to the element whereby the compressive stresses applied thereto are varied and an output voltage is produced which is adapted to be used in examining the accuracy of the watch movement.

3,690,145

VEHICLE SUSPENSION TESTING APPARATUS

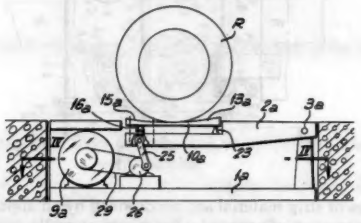
Gerard Brisard, Fontenay-sous-Bois, France, assignor to Etablissement Muller & Cie, Paris, France

Filed Oct. 7, 1970, Ser. No. 78,670

Claims priority, application France, Oct. 15, 1969, 6935345

Int. Cl. G01m 17/04

U.S. Cl. 73—11 7 Claims



This apparatus for testing the suspension system of vehicles comprises a platform to which vertical vibrations are imparted possibly through a crank-and-rod mechanism driven from a motor having a flywheel and a clutch mounted on its output shaft, said platform supporting the wheel to be tested through a shaped plate pivoted at one end to said platform and bearing at the opposite end on one or a plurality of pressure detecting elements such as piezo-electric elements responsive to the stress variations caused by the wheel oscillations and to transmit same to a dial instrument and/or a recorder.

3,690,146

DEVICE FOR METERING A PARTICULAR QUANTITY OF FLUID

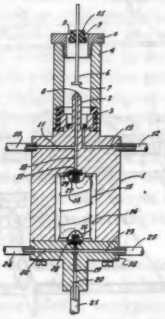
Kurt Hofmann, Hergershausen, Germany, assignor to Hartmann & Braun, Aktiengesellschaft, Frankfurt/Main, Germany

Filed Aug. 30, 1971, Ser. No. 175,918

Claims priority, application Germany, Sept. 10, 1970, P 20 44 772.7

Int. Cl. G01n 1/22, 31/08, 31/12

U.S. Cl. 73—23.1 9 Claims



Device for metering a particular quantity of fluid flowing into a particular duct; a capillary tube having inlet extending into the duct; first and second duct means respectively leading to and from the particular duct downstream from the capillary inlet, an auxiliary fluid flows into the first duct means and is

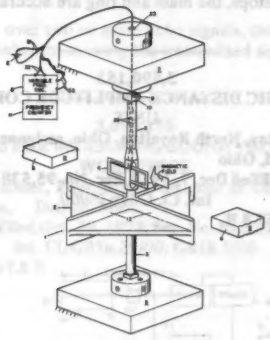
discharged again through the second duct means together with fluid flowing in the particular duct and not having entered the capillary; and means are provided for obtaining pressure regulation of the auxiliary fluid as passing through the first and second duct means to obtain constant pressure head at inlet of the capillary tube.

3,690,147

TORSIONAL VIBRATION DENSITOMETER

Howard W. Kuenzler, South Acton, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Aug. 15, 1969, Ser. No. 850,534
Int. Cl. G01n 9/00
U.S. Cl. 73—32 9 Claims



A direct measurement of density of a fluid is made by coupling the fluid to a rod under torsional oscillation. The frequency of torsional oscillation is maintained at the resonant frequency by sensing the phase difference between the stress in the rod and the current in a driving coil which produces the force to sustain torsional oscillation in the rod. The stress is measured by strain gauges which provide the electrical signal for phase comparison with the driving coil current. The frequency of the current is controlled by a voltage controlled oscillator whose input is derived from the phase comparison to provide a frequency which is at the resonant frequency of the oscillatory rod as modified by the density of the fluid to which it is coupled. The precise relationship between fluid density and resonant frequency is established by calibration.

3,690,148

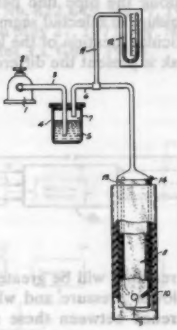
PRESSURE TRANSDUCERS

Charles Snowdon, Tudor Cottage, Lammas Lane, Esher, Surrey, England

Filed July 22, 1970, Ser. No. 57,294
Claims priority, application Great Britain, July 24, 1969, 37,374/69
Int. Cl. G01m 3/02
U.S. Cl. 73—37 9 Claims

Measurement of the pressure between two members in contact, where at least one of the members is compliant, involves the use of a flexible tube which is open at one end, closed at the other, and has an aperture spaced between its longitudinal edges at its closed end. The tube is inserted between the two members with the tube aperture located in the region where pressure measurement is required, and fluid applied to the tube open end at progressively varied pressure until the fluid flows continuously through the aperture.

Since the aperture is otherwise effectively sealed by the two



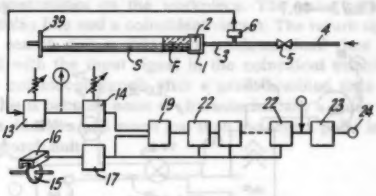
members, such flow first occurs when the applied fluid pressure equals that between the members.

3,690,149

ELECTROPNEUMATIC CIGARETTE INSPECTION

Giovanni Pezzi, Via De Giovanni 51, Bologna, Italy

Filed June 22, 1970, Ser. No. 48,316
Claims priority, application Italy, July 9, 1969, 7150 A/69
Int. Cl. G01m 3/02
U.S. Cl. 73—38 9 Claims



Cigarettes that are to be tested for defects are fed in succession, side by side, and equally interspaced, on a transfer means driven continuously and transversely to the cigarettes to temporarily drive each cigarette axially to position an end of each cigarette to be tested into a mouthpiece which communicates with a testing chamber containing a pressure transducer sensing element. The chamber communicates alternately and periodically with the atmosphere and with a pressurized gas source which establishes, in the chamber, a maximum value of pressure in relation with the condition of the cigarette being examined. A transducer responds to the maximum value of pressure with an electric signal that is correlated with a recurrence signal of constant frequency and a rejection signal is generated for the actuation of a device which expels, from the row of cigarettes tested, those cigarettes for which the maximum pressure value reached was less than a predetermined pressure value considered as a lower limit for the criterion of acceptance of the cigarettes under test.

3,690,150

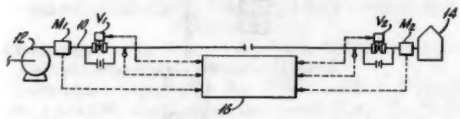
PIPE LINE LEAK DETECTION AND LOCATION SYSTEM

John S. Mullen, Florham Park, N.J., assignor to Esso Research and Engineering Company

Filed Aug. 19, 1971, Ser. No. 173,113
Int. Cl. G01m 3/02, 3/28
U.S. Cl. 73—40.5 R 7 Claims

A pipe line leak detection and location system including means for raising and lowering the pressure in a flowing pipe line, and metering the flow at the inlet and outlet of the pipe line at the different pressure levels, thus enabling pipe line leaks of very small magnitude to be detected. By determining

the increase in the rate of a leak at high pressure over that obtained at low pressure, pipe line leaks can be detected. Block valves paralleled by orifices, or control valves, located at spaced intervals along the pipe line permit the raising and lowering of the pressure in selected segments of the pipe line, and allow the particular location of the leak also to be determined. When a leak is present the difference between the in-



flow and outflow readings will be greater at the higher pressure than at the lower pressure and when there is no leak present, the difference between these readings will be the same at the high pressure and the low pressure. Electronic control means are provided to receive pressure and flow responsive signals from the pipe line and transmit these signals to further control equipment connected with the pipe line for controlling pressure and flow thereof.

3,690,151

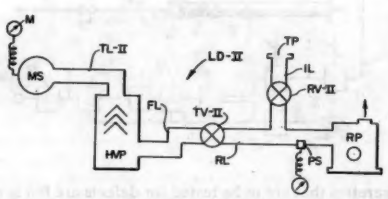
LEAK DETECTOR

Walton E. Briggs, Lynnfield, Mass., assignor to Norton Company, Worcester, Mass.

Filed July 25, 1968, Ser. No. 747,505

Int. Cl. G01m *3/20*

U.S. Cl. 73—40.7 **14 Claims**



Mass spectrometer leak detector and associated high vacuum pump and trace gas leak sample inlet connected so that the leak sample is fed to the outlet of the vacuum pump, backwards through the high vacuum pump and into the spectrometer. The invention is carried out through apparatus comprising a diffusion pump with a mass spectrometer connected to the pump inlet and a trace gas inlet connected to the diffusion pump foreline.

3,690,152

METHOD AND APPARATUS FOR BALANCING A BODY ABOUT AN AXIS

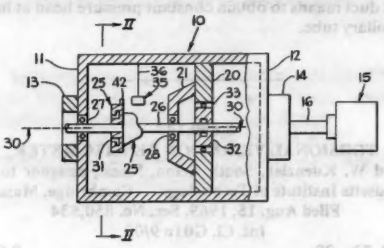
Walter J. Hirtreiter, 15 Ranch Trail, Williamsville, N.Y.

Filed April 20, 1970, Ser. No. 29,844

Int. Cl. G01m *1/00*

U.S. Cl. 73—66 **13 Claims**

A body to be balanced about an axis is provided with an annular groove capable of retaining a liquid having a viscosity which increases with time to a point at which flow ceases. The amount of unbalance in the body is sensed and the indication thereof is utilized to operate a positioning motor or similar device to move the body relative to the axis to distribute the liquid while the flow tends to cease. When the flow has stopped, the body is accurately balanced about the axis. The pendulous mass of an accelerometer can be balanced about an axis to make the mass insensitive to linear acceleration when it is desired to measure angular acceleration. A balancing ring provided with a liquid retaining annular groove is attached to the mass, and free rotation of the mass is restrained by operation of the accelerometer sensing means. Electrical signals indicative of movements of the mass about the axis activate a



motor which, in turn, rotates the accelerometer casing to distribute balancing liquid along the groove in the ring. When the flow of liquid stops, the mass and ring are accurately balanced about the axis.

3,690,153

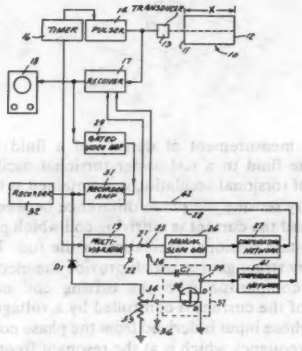
ULTRASONIC DISTANCE AMPLITUDE CORRECTION UNIT

Istvan M. Matay, North Royalton, Ohio, assignor to TRW Inc., Cleveland, Ohio

Filed Dec. 7, 1970, Ser. No. 95,538

Int. Cl. G01n *29/00*

U.S. Cl. 73—67.8 R **4 Claims**



An automatic distance amplitude correction device and circuit which automatically corrects for amplitude variations in signals such as caused by the attenuation of sound propagating through a test specimen. A signal is transmitted through a test specimen and the reflection is detected and used to control the time constant of an integrating circuit so that the signal applied to a compensating network for controlling the gain in the receiver is automatically adjusted as a function of the amplitude of the received signals.

3,690,154

APPARATUS FOR MEASURING THICKNESS

Frank Herbert Wells, Abingdon, and Roger Martin, Tilehurst, Reading, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed July 17, 1970, Ser. No. 55,739

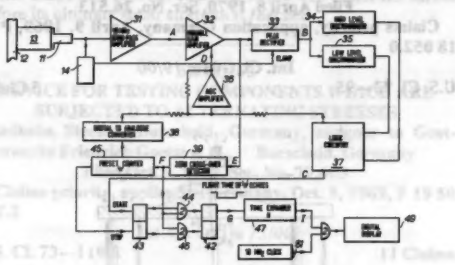
Claims priority, application Great Britain, July 21, 1969, 36,657/69; Oct. 16, 1969, 50,983/69

Int. Cl. G01n *29/04*

U.S. Cl. 73—67.9 **4 Claims**

Improved accuracy in ultrasonic thickness measurement is achieved by interposing a polystyrene block between the

transducer and the metal. The echo signals are then well separated in time from the transmitted signal. Time measure-



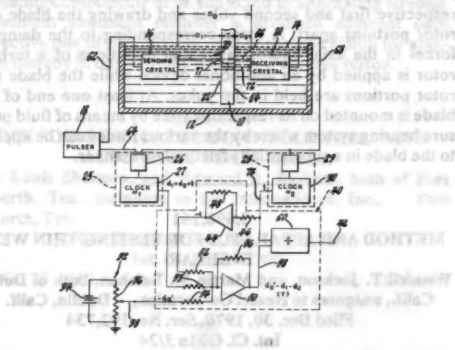
ment is made over two or more echo signals, thus eliminating inaccuracies inherent in using the transmitted signal as a time reference.

3,690,155

APPARATUS FOR MEASURING SOUND VELOCITY IN A WORKPIECE

Richard H. Eichler, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 30, 1970, Ser. No. 85,558
Int. Cl. G01n *29/00*; G01h *5/00*
U.S. Cl. 73—67.5 R **6 Claims**



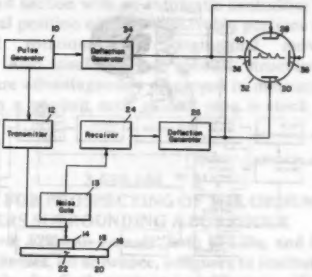
A method and apparatus for determining the velocity of sound in a workpiece. The workpiece is placed between sending and receiving electroacoustic transducers that are spaced a predetermined distance in a sound transmitting medium. The sending electroacoustic transducer is pulsed so as to generate acoustic impulses directed toward the receiving electroacoustic transducer, which detects both the impulse and a delayed image of the impulse. A first signal that is proportional to the elapsed time between the generation and the detection of an impulse and a second signal that is proportional to the elapsed time between the detection of the impulse and the detection of the delayed image of the impulse are combined by a signal gen-erating network with a third signal that is proportional to the time that is required for sound to travel the predetermined distance in the medium so as to produce an output signal which is proportional to the velocity of the impulse through the workpiece.

3,690,156

NOISE GATE FOR ULTRASONIC TEST APPARATUS

John A. Robinson, Sam Ramon, Calif., assignor to Automation Industries, Inc., Century City, Calif.

Continuation of Ser. No. 822,645, May 7, 1969, abandoned.
This application May 27, 1971, Ser. No. 147,662
Int. Cl. G01n *29/04*
U.S. Cl. 73—67.9 **4 Claims**



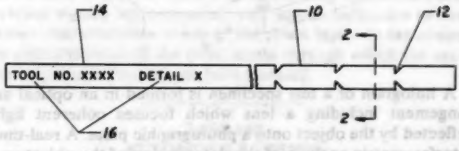
An ultrasonic nondestructive test system is described which includes a noise gate which is capable of immediately removing noise signals from the input signals before they reach the receiver. The system includes a search unit, a transmitter and receiver unit for displaying on a display device the defects or other discontinuities on the workpiece. The noise gate includes a delay line and a coincident circuit. The return signal from the search unit is delayed a predetermined time and compared with the input signal in the coincident circuit to pass only coincident signals after a predetermined time has passed. This is because noise is characteristically a pulse of a short time duration and much less than the return pulse input from the search unit.

3,690,157

METHOD AND APPARATUS FOR HARDNESS TESTING

Robert E. Seppey, South Bend, Ind., assignor to The Bendix Corporation

Filed July 27, 1970, Ser. No. 62,216
Int. Cl. G01n *3/46*
U.S. Cl. 73—78 **4 Claims**

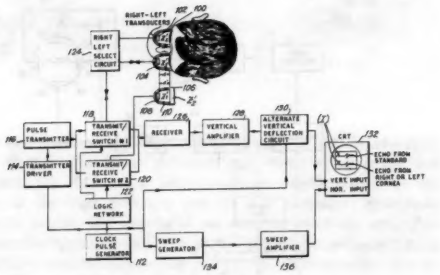


A practical method of shop testing for the presence of a superficial hard case on metals consists of scratching the surface with an instrument made of a steel selected for its excellent heat treating and tempering qualities carefully hardened to one to three points below the minimum hardness specified for the case. The instrument consists of a square or rectangular bar with a multiplicity of opposed notches machined to provide square corners with a prescribed minimum radius. Whenever it appears that the corners which are being used have been worn to an unacceptably large radius, a section of the bar can be snapped off and thrown away to expose four new corners for use.

3,690,158
MEANS AND METHOD FOR DETECTION OF GLAUCOMA

Bernard Lichtenstein, 1825 Highbrook St., Yorktown Heights, N.Y., and Bruce G. Kroger, Purchase St., Rye, N.Y.

Division of Ser. No. 679,379, Oct. 31, 1967, Pat. No. 3,545,260. This application May 6, 1970, Ser. No. 34,952
Int. Cl. G01n *29/00*; A61b *3/16*
U.S. Cl. 73—80 2 Claims

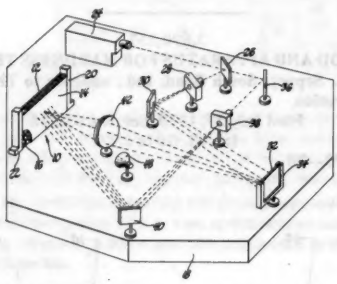


The acoustic impedance of the cornea is measured by comparing the energy it reflects with the energy reflected by a calibrated, variable impedance member.

3,690,159
HOLOGRAPHIC INTERFEROMETRY EMPLOYING IMAGE PLANE HOLOGRAMS

Leonard A. Kersch, and Edwin B. Champagne, both of Ann Arbor, Mich., assignors to GC Optronics, Inc., Ann Arbor, Mich.

Filed April 29, 1970, Ser. No. 32,941
Int. Cl. G01b *11/16*; G01n *3/18*
U.S. Cl. 73—88 A 11 Claims



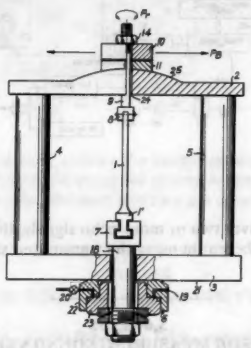
A hologram of a test specimen is formed in an optical arrangement including a lens which focuses coherent light reflected by the object onto a photographic plate. A real-time interferometric analysis of the deformation of the object as a result of loading is made using the resulting image-plane hologram. The interference fringe frequency in particular area resulting from gross deformation of the object is decreased to allow the detection of fringe anomalies in that area by suitable translations of the hologram relative to the reconstruction beam.

In an alternate embodiment, a pair of image-plane holograms of the object at two states of loading are formed on the same photographic plate by a double-exposure technique using reference beams which bear different angles to the photographic plates during the two exposures. To reconstruct the holograms a pair of reconstruction beams are employed and motion of the beams relative to one another allows the fringe frequency on various areas of the object to be modified.

3,690,160
APPARATUS FOR TESTING THE BLADE ANCHORAGE OF TURBINE BLADES

Horst Kriesten, Raunheim, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt, Germany

Filed April 8, 1970, Ser. No. 26,513
Claims priority, application Germany, April 9, 1969, P 19 18 052.0
Int. Cl. G01m *19/00*
U.S. Cl. 73—95 5 Claims

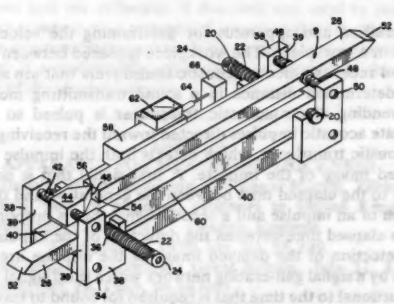


An improved testing apparatus for determining tightness, deformations and weak points of the blade anchorage of a turbine blade. The apparatus operates by applying forces to a blade or portion thereof which includes a blade base, attached in the normal fashion to a simulated portion of a turbine rotor. A force in a direction corresponding to the radial direction in a turbine rotor and hence to the centrifugal force in a rotating rotor is applied by attaching the blade and rotor portion to respective first and second yokes and drawing the blade and rotor portions apart. A force corresponding to the damping forces in the axial and/or tangential directions of a turbine rotor is applied by an additional device while the blade and rotor portions are held in the yokes. At least one end of the blade is mounted on its respective yoke by means of fluid pressure bearing system whereby the various forces can be applied to the blade in a substantially frictionless manner.

3,690,161
METHOD AND APPARATUS FOR TESTING THIN WEBS IN SHEAR

Wendell T. Jackson, and Martin M. Balaban, both of Dublin, Calif., assignors to Hexcel Corporation, Dublin, Calif.

Filed Dec. 30, 1970, Ser. No. 102,734
Int. Cl. G01n *3/24*
U.S. Cl. 73—101 16 Claims



A method and apparatus for subjecting thin sheets, webs, foils, films and the like to in-plane shear stresses. A rectangu-

larly shaped specimen is grasped at its long sides, opposing forces acting in the direction of the long sides are applied to the long sides and portions the sheet between the long sides are placed between stabilizing bars that maintain the web in its planar shape and prevent buckling of the web under the forces before its ultimate shear strength is reached.

3,690,162

DEVICE FOR TESTING COMPONENTS WHICH ARE SUBJECTED TO ALTERNATING STRESSES

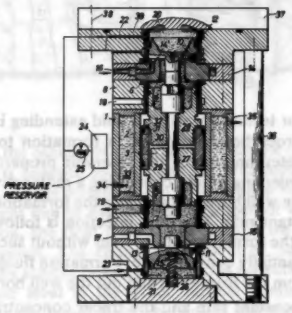
Friedhelm Stecher, Burscheid, Germany, assignor to Goetzewerke Friedrich Goetze A.G., Burscheid, Germany

Filed Oct. 9, 1970, Ser. No. 79,603

Claims priority, application Germany, Oct. 9, 1969, P 19 50 917.2

Int. Cl. G01m *15/00*

U.S. Cl. 73—119 R **11 Claims**



A device having a vibrating assembly driven by a free piston for testing components to be subjected to alternating stresses. A resilient abutment member is arranged adjacent each respective one of the opposed ends of the free piston for abutment thereby in one extreme position of the free piston.

3,690,163

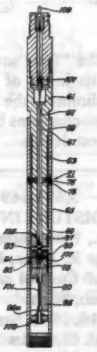
FREE POINT INDICATOR DOWNHOLE TOOL WITH AUTOMATIC CENTRALIZER

John Louis Shannon, and Edward R. Basham, both of Fort Worth, Tex., assignors to Go International, Inc., Fort Worth, Tex.

Filed Dec. 10, 1970, Ser. No. 96,910

Int. Cl. E21b *47/00*

U.S. Cl. 73—151 **11 Claims**



Apparatus for attaching to a conduit at a depth in a borehole, as in free point indicator tools, characterized by a plurality of aspects. In a first aspect, the apparatus has individual, non-flow restricting attachment members that are operable to engage the conduit any number of times on a trip into the well with a force sufficient to bear the weight of the tool and any sinker bars and cable resting thereon. In a second aspect, the force is controlled electrically from the surface with a current limiter and a downhole electric motor is run to stall. In a third aspect, the attachment members are connected with the downhole motor via a shear pin so the pin can be sheared to release the attachment members in the event of power failure. In a fourth aspect, the downhole, or borehole tool has a sensor section with an automatic centralizer for effecting a neutral position of the two movable portions for detecting small rotational or longitudinal movement therebetween. Also disclosed are specific structures and methods that are advantageously employed in measuring the depth at which a conduit such as drill pipe is stuck in the borehole.

3,690,164

PROCESS FOR PROSPECTING OF THE GROUND LAYERS SURROUNDING A BOREHOLE

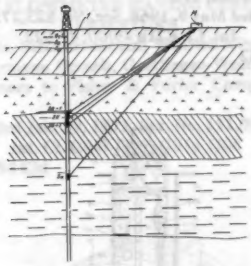
Robert Gabillard; Francois Louage, both of Lille, and Robert Desbrandes, Sevres, all of France, assignors to Institut Francais du Petrole, des Casburants et Lubrifiants, Hauts de Seine, France

Filed June 24, 1969, Ser. No. 836,020

Claims priority, application France, June 24, 1968, 68156220; June 24, 1968, 68156232

Int. Cl. E21b *47/026*

U.S. Cl. 73—151 **14 Claims**



To determine physical characteristics of successive ground strata, signals are transmitted from successive depth locations in a borehole and received at a surface location spaced from the location of the borehole. The successively transmitted and received signals are compared with signals indicative of the known characteristics of one of the strata layers to determine the characteristics of the other strata through which the successively transmitted signals have traveled.

3,690,165

AUTOMOBILE TESTER

Giuseppe Sturmo, Rome, and Mario Maran, Vicenza, both of Italy, assignors to F.A.V., S.r.l., Rome, Italy

Filed May 14, 1970, Ser. No. 37,129

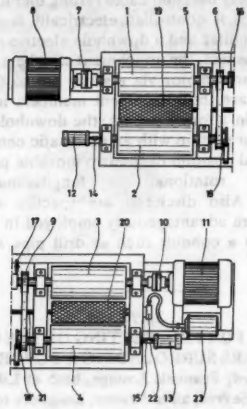
Claims priority, application Italy, Aug. 28, 1969, 61621 A/69

Int. Cl. G01l *5/13*

U.S. Cl. 73—117 **5 Claims**

A test-bed for automobile vehicles has pairs of coupled rollers to receive each of the wheels of the vehicle, with a tachymetric dynamo coupled to each pair. An electrical machine, capable of functioning selectively as a motor or as a generator is coupled to each pair of rollers. The circuitry of the electrical machines is such that the torque exerted (when they act as a motor) or the resistance coupled exerted (when they act as a generator) can be made to compensate exactly,

at various speeds, for the differences which exist between the equivalent moment of inertia of the vehicle and the effective



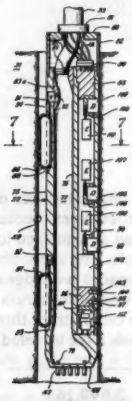
moment of inertia possessed by the rotating parts of the test-bed.

3,690,166

APPARATUS FOR MEASURING SUBSURFACE SOIL CHARACTERISTICS

C. Fitzhugh Grice, c/o Grice Ocean Engineering, Inc. 7210 Hemlock, Houston, Tex.

Filed May 9, 1969, Ser. No. 823,275
Int. Cl. E21b *49/00, 47/022*
U.S. Cl. 73—152 16 Claims



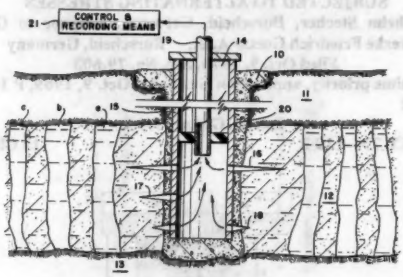
An instrument platform structure is lowered to the bottom of a body of water by means of a hoisting cable. A measuring instrument is lowered from the underwater platform structure by means of an instrument cable coupled to a spooling drum located on such underwater platform structure. The measuring instrument burrows its way into the water bottom soil by emitting water from water nozzles on the lower end of the instrument. The pressurized water is supplied to the nozzles by means of a water hose forming part of the instrument cable and a water pump mounted on the underwater platform structure. The measuring instrument includes various measuring devices such as penetrometers, nuclear radiation devices, etc., for making measurements indicative of physical characteristics of the soil adjacent the hole formed by the passage of the measuring instrument.

3,690,167

METHOD FOR DETERMINING THE RESERVOIR PROPERTIES OF A FORMATION

Curtis A. Chase, Jr., Pearland, Tex., and Michael Prats, Houston, Tex., assignors to Shell Oil Company, New York, N.Y.

Filed Jan. 14, 1970, Ser. No. 2,766
Int. Cl. E21b *49/00*
U.S. Cl. 73—155 4 Claims



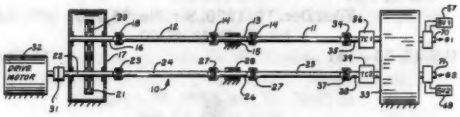
A method for testing a well bore hold extending into a subterranean hydrocarbon-bearing earth formation to obtain a quantitative determination of the reservoir properties of the formation by injecting a fluid containing a radioactive isotope tracer down the well borehole and into the formation at a substantially constant rate. The fluid injection is followed by an injection into the formation of the fluid without such a tracer also at a substantially constant rate. Formation fluids are then backflowed from the formation and out the well borehole at a substantially constant rate and the tracer concentration with time in the backflow formation fluids is measured at a plurality of substantially equally spaced intervals.

3,690,168

FOUR SQUARE TEST DEVICE WITH TORQUE STABILIZATION

Niel R. Petersen, Hopkins, Minn., assignor to MTS Systems Corporation, Minneapolis, Minn.

Filed Dec. 31, 1970, Ser. No. 103,063
Int. Cl. G01m *13/02*
U.S. Cl. 73—162 12 Claims



A test device using the "four square" principal of testing specimens which permits input of dynamic torque changes and being arranged to eliminate the inertia effects of the mass of connecting gears or mechanisms between the parallel members of the four square test device.

3,690,169

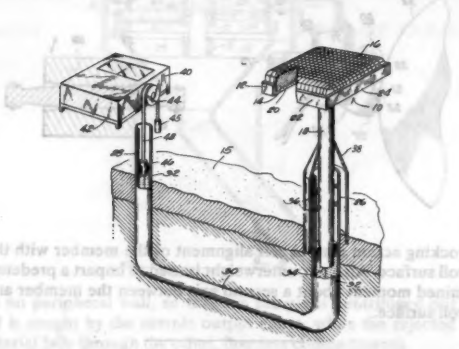
SNOW MOISTURE INTEGRATOR

Henry S. Santeford, Jr., Fort Collins, Colo.; John G. Meier, Negaunee, and George R. Alger, Dollar Bay, both of Mich., assignors to Board of Control of Michigan Technological University, Houghton, Mich.

Filed April 16, 1971, Ser. No. 134,617
Int. Cl. G01w *1/14*
U.S. Cl. 73—171 12 Claims

A snow moisture integrator for automatically measuring and recording changes in moisture content related to the surface of a snow pack includes two spaced vertical conduits interconnected by a horizontal conduit. The conduits are posi-

tioned in the vicinity of the snow pack and are substantially filled with a non-freezing liquid. A sample holding assembly, including an open top receptacle for holding snow and a float rod connected to the receptacle, floats in the column of liquid in one of the vertical conduits. A float is operatively connected to a continuous stage recorder and floats in the column



of liquid in the other vertical conduit. A sample of snow in the receptacle is exposed to the same ambient conditions as the snow pack. As the weight of the snow sample varies, either a loss of weight due to evaporation or a gain of weight due to condensation, the float rod rises or sinks in the liquid in the vertical conduit. The change in amount of liquid thus displaced by the sample holding assembly is reflected in a change in the liquid level in the other vertical conduit. The float responds to the liquid level changes in the conduit and this movement is recorded thereby providing a record of weight changes in the snow sample and, hence, the amount of evaporation and condensation.

3,690,170

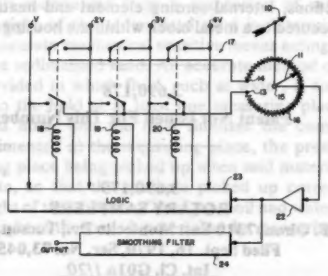
AUTOMATIC WIND DIRECTION READOUT DEVICE

John H. Lane, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army

Filed July 30, 1971, Ser. No. 167,739

Int. Cl. G01p *13/02*

U.S. Cl. 73—188 **2 Claims**



A wind vane rotates the arm of a potentiometer having a three-terminal voltage divider. The filtered output voltage of the potentiometer is an indication of wind direction. Avoidance of any discontinuities in the output voltage due to the potentiometer gap is accomplished by a logic device and a relay which switches the voltage range of the potentiometer whenever the arm crosses the gap. Therefore, the filtered output of the potentiometer will be a continuously varying voltage extending over three full revolutions of the wind vane.

3,690,171

FLUID FLOW MEASUREMENT

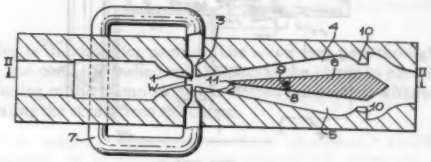
John Russell Tippetts, Sheffield; Jack Alexander Golder, Appleton, and John Grant, Warrington, all of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Oct. 15, 1970, Ser. No. 80,938

Claims priority, application Great Britain, Oct. 29, 1969, 52,953/69

Int. Cl. G01f *1/00*

U.S. Cl. 73—194 B **5 Claims**



A fluidic oscillator may be used to measure the flow rate of fluids. In a flow meter in accordance with the invention a fluidic oscillator has its control ports cross-connected to induce oscillation and differential pressure sensing means housed in the connection between the fluid outlet channels of the oscillator for converting alternating pressure in those channels to an electrical signal.

3,690,172

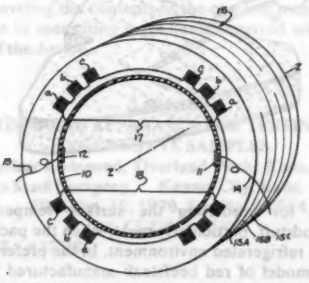
MAGNETIC FLOWMETER HAVING FERROUS FIELD ARMATURE

Broder Ketelsen, Settmarshausen; Wilfried Kiene, Hedemuenden, and Hermann Grosch, Goettingen-Weende, all of Germany, assignors to Fisher & Porter Company, Warminster, Pa.

Filed Jan. 29, 1971, Ser. No. 111,003

Int. Cl. G01f *1/00*; G01p *5/08*

U.S. Cl. 73—194 EM **4 Claims**

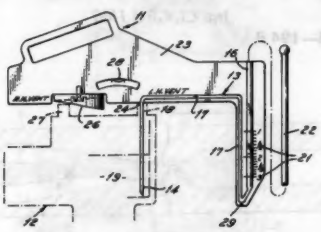


A magnetic flowmeter for measuring volumetric fluid flow rates, the meter including a pair of electrodes disposed at diametrically opposed points in a non-magnetic pipe section through which the fluid to be measured is conducted. A non-homogeneous magnetic field is established in the pipe section by a laminated ferrous field armature of cylindrical form encircling the pipe section and provided with longitudinally extending slots to accommodate the windings of two field coils symmetrically disposed relative to the electrodes.

3,690,173

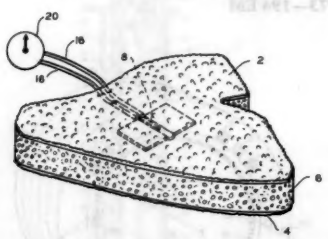
Patent Not Issued For This Number

3,690,174
LIQUID LEVEL GAGE
Ronald T. Denton, Birmingham, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Nov. 4, 1970, Ser. No. 86,878
Int. Cl. G01f 23/02
U.S. Cl. 73—323 6 Claims



A gage to indicate the level of liquid within an enclosed, vented container, such as a carburetor fuel bowl. The gage includes a double reversed tube, a depending end of which is inserted into the container and the other end of which is equipped with a suction device for drawing liquid from the container into the tube. Upon venting the drawn liquid within the tube to the atmosphere, the liquid level within the tube becomes identical to that within the container.

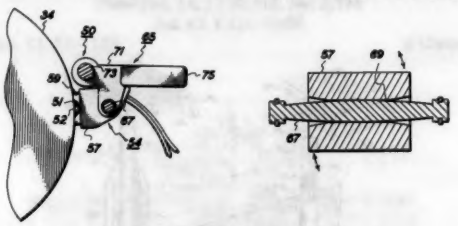
3,690,175
MECHANISM FOR PREDICTING FOOD TEMPERATURES
Earl E. Butts, Niles, Mich., assignor to Clark Equipment Company
Filed April 5, 1971, Ser. No. 131,008
Int. Cl. G01k 1/16, 7/04
U.S. Cl. 73—343 R 10 Claims



Apparatus for predicting the surface temperature of packaged foodstuff, particularly meat, when the packages are exposed to a refrigerated environment. In the preferred form, it utilizes a model of red beefsteak manufactured from two metallic plates with insulating material sandwiched therebetween. In this embodiment, the exterior surface of the panel is textured and coated the same color as the meat being simulated and the temperature of the surface of the plate mating with the insulating material is measured by utilizing a thermocouple connected to an electric meter.

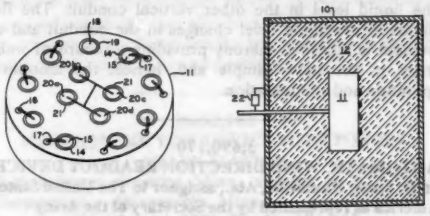
3,690,176
TEMPERATURE SENSING APPARATUS
Douglas P. Connolly, Webster, and Raymond E. Poehlein, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed April 26, 1971, Ser. No. 137,302
Int. Cl. G01k 1/14, 7/16, 13/08
U.S. Cl. 73—351 5 Claims

Temperature sensing apparatus in which a temperature responsive member is maintained in a self aligning position with a predetermined force on the surface of a heated rotating or stationary roll surface. Support is given on a crowned pin member which enables the temperature responsive member to rock perpendicular and parallel to the heated roll axis. This



rocking action assures self alignment of the member with the roll surface. Also a counterweight is used to impart a predetermined moment about a second axis between the member and roll surface.

3,690,177
THERMOCOUPLE REFERENCE JUNCTION
Dale A. Fluegel, c/o Phillips Petroleum Company, Bartlesville, Okla.
Filed Nov. 16, 1970, Ser. No. 89,900
Int. Cl. G01k 7/12
U.S. Cl. 73—361 4 Claims



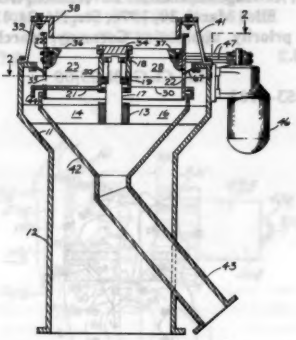
Reference thermocouple junctions are maintained at a constant temperature by an insulated housing which surrounds the junctions. A heating element is contained within the housing. Temperature sensing elements disposed within and outside the housing control the heating element. The thermocouple junctions, internal sensing element and heating element can be secured to a metal block within the housing.

3,690,178
Patent Not Issued For This Number

3,690,179
ROTARY SAMPLERS
James F. Olson, 7310 East Montecito Dr., Tucson, Ariz.
Filed Sept. 16, 1970, Ser. No. 73,045
Int. Cl. G01n 1/20
U.S. Cl. 73—424 18 Claims

A sample disc assembly is divided into a number of equal sectors separated by vertical radial walls. This assembly is rotated around a vertical center axis in a stream of falling material, such as ore. In one embodiment, one of the sectors has no floor but has a peripheral vertical wall, so that the material falling on this sector falls through and constitutes the sample. All of the other sectors have floors and have no peripheral walls, so that material falling into them is thrown by centrifugal force into an annular space surrounding the disc assembly, where the material is collected as the reject material.

In a second embodiment the functions of the two kinds of sectors are reversed. The sample compartment has a floor but



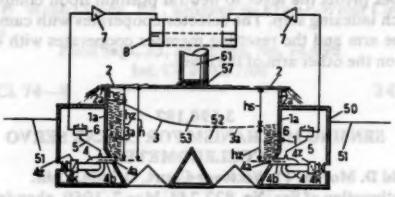
has no peripheral wall, so that the sample is centrifuged out and is caught by the sample output chute, while the rejected material falls through the other, floorless compartments.

3,690,180

DREDGER VESSEL AND A METHOD OF DETERMINING THE LOADED WEIGHT OF SEDIMENTED MATERIAL IN A DREDGER VESSEL

Romke Van Der Veer, Jutphaas, Netherlands, assignor to N.V. Ingenieursbureau voor Systemen en Octrooien "Spanstaal", Rotterdam, Netherlands

Filed Jan. 30, 1970, Ser. No. 7,012
Int. Cl. G01f *23/14*; G01n *9/04*
U.S. Cl. 73—432 R 30 Claims



When measuring the quantity of sand in a dredger vessel which sand is sedimented from a suspension of sand and water, the height of the sedimented sand is determined by means of inaccurate mechanical sensitive means acting on the surface of the sedimented sand. An accurate method of measuring is provided in which fluid, such as water, is so fed at pressure, into the hold at at least one measuring place provided in said hold, that the fluid fluidizes the compacted material sedimented at the measuring place, the pressure at the measuring place being picked up when said material is in fluidized state, so that the pressure picked up corresponds with the weight of the column of dredger spoil and water, from which the weight of the loaded material at the measuring place is derived.

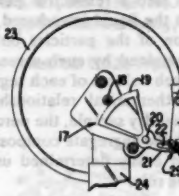
3,690,181

SEGMENT RANGE ADJUSTMENT CLAMP

Kenneth C. Kemmerer, Quakertown, Pa., assignor to Ametek, Inc., New York, N.Y.

Filed June 26, 1970, Ser. No. 50,183
Int. Cl. G01l *7/04*
U.S. Cl. 73—418 1 Claim

The slotted tail portion of a sector gear has slideably mounted thereon a substantially U-shaped clamp with one end of the clamp having a bent lip so that the clamp has a cross-section substantially conforming to the cross-section of the tail member. A screw passes through an opening in one leg portion of the clamp, through the slot and is threaded into an



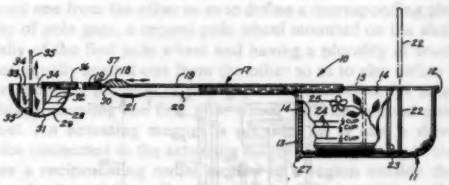
opening in the other leg portion. The screw may pass through a link and can be loosened with respect to the clamp to permit positioning of the clamp along the slotted tail portion without separating the screw from the clamp.

3,690,182

MEASURING SCOOP AND SPOON COMBINATION

Mercedes Rodriguez, 2947 Nashville Dr., San Jose, Calif.

Filed Aug. 10, 1970, Ser. No. 62,554
Int. Cl. G01f *19/00*
U.S. Cl. 73—429 5 Claims



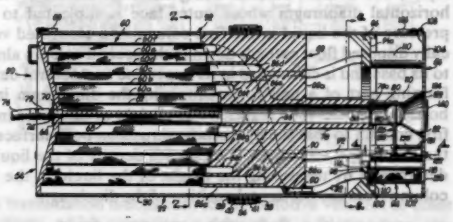
A measuring device for household use. This device is provided with a cup portion which will receive a slide member which is held in place by the walls being grooved, the slide serving to define a definite unit of measurement. The device also includes a horizontal slide having a handle which may be used for leveling the contents of the cup and may be also used as a guide in measuring ingredients received within the cup portion of the device.

3,690,183

METHOD AND APPARATUS FOR TESTING FINE AGGREGATE SAMPLES

Harry Harlan Livingood, Overland Park, Kans., assignor to Builders Sand Company, Kansas City, Kans.

Filed Oct. 15, 1970, Ser. No. 80,914
Int. Cl. G01n *15/02*
U.S. Cl. 73—432 PS 8 Claims



A method and apparatus for testing a fine aggregate sample wherein a measured quantity of the aggregate is introduced into the inner cylindrical sizing screen of a series thereof of decreasing mesh fineness and then liquid is introduced into

the interior of the inner screen while the series thereof along with a casing around the screens are constantly rotated to effect segregation of the particles of aggregate. Manifold structure at one end of the screens directs particles retained within a particular screen into a respective perforated volumetric measuring cup with the liquid introduced serving not only to facilitate segregation of the particles but also operating to flush all particles retained by each screen from the surface thereof. Since the web volume of each segregated sample collected bears a mathematical relationship to the amount thereof in the original dry sample, the percentage of each size range of particles in the aggregate composition being sampled can be quickly and easily determined using an empirically derived table or slide rule.

3,690,184

APPARATUS FOR STATICALLY MEASURING THE AVERAGE DENSITY OF A LIQUID CIRCULATING IN A PIPELINE

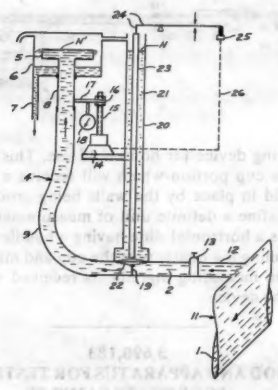
Pierre Chadenson, La Tronche, France, assignor to Societe Generale De Constructions Electriques Et Mechaniques (Alsthom), Grenoble, France

Filed June 24, 1970, Ser. No. 48,973

Claims priority, application France, June 27, 1969, 6921897

Int. Cl. G01n *9/26*

U.S. Cl. 73—438 **18 Claims**



The apparatus comprises a first column in which a certain flow extracted from the pipeline circulates, and a second column containing a predetermined quantity of calibrating liquid, the second column being fitted at its base with a horizontal diaphragm whose outer face is subjected to the pressure of the liquid in the first column. An elongated vertically disposed float extends down in the second column almost to its base and is connected at its upper end to a control device forming part of a unit for maintaining the diaphragm in its horizontal position by regulating the height of the liquid in the first column so that the hydrostatic thrusts on both surfaces of the diaphragm are equal. The average density of the liquid is determined by measuring the height of the liquid in the first column from the horizontal position of the diaphragm.

3,690,185

Patent Not Issued For This Number

3,690,186

PROJECTOR FOR PHOTOGRAPHIC TRANSPARENCIES

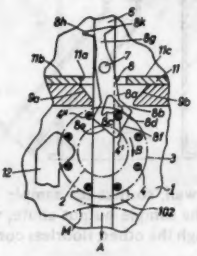
Josef Fleissner, Kirchseeon, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed March 20, 1970, Ser. No. 21,417

Claims priority, application Germany, March 21, 1969, G 69 11 413.2

Int. Cl. G03b *23/00*

U.S. Cl. 353—103 **9 Claims**



A slide projector wherein the slide changer carries a two-armed lever which tends to resist pivotal movement and rotates a wheel to thereby index the magazine for slides while the slide changer continues to move upon completed return of a slide into the respective compartment. An adjustable selector can pivot the lever from a neutral position to one of two operative positions in which the lever respectively rotates the wheel in a clockwise and in a counterclockwise direction (forward and backward transport of the magazine). A resetting member pivots the lever to neutral position upon completion of each indexing step. The selector cooperates with cam faces on one arm and the resetting member cooperates with extensions on the other arm of the lever.

3,690,187

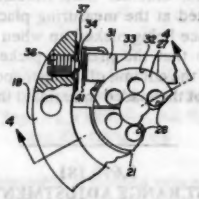
SENSING MECHANISM FOR LINEAR SERVO ACCELEROMETER

Harold D. Morris, 11 Westover Court, Orinda, Calif.

Continuation of Ser. No. 822,744, May 7, 1969, abandoned, which is a continuation of Ser. No. 559,284, June 21, 1966, abandoned. This application Jan. 27, 1971, Ser. No. 110,282

Int. Cl. G01p *15/08*

U.S. Cl. 73—517 B **6 Claims**



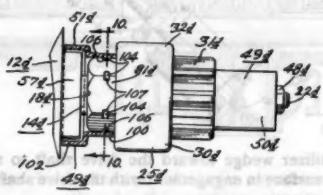
Sensing mechanism for a linear servo accelerometer having a rigid bar which is pivotally mounted on each end and having a restoring coil rigidly secured thereto and in which a non-magnetic conducting member is carried within the confines of the coil and in which a pick off coil is provided to sense the position of the member.

3,690,188

ENGINE STARTER DRIVE ASSEMBLY

Bobby E. McMillen, Columbus, Miss., assignor to AMBAC Industries, Incorporated, Columbus, Miss.

Filed May 7, 1970, Ser. No. 35,518
Int. Cl. F02n 11/00
U.S. Cl. 74—7 R 8 Claims



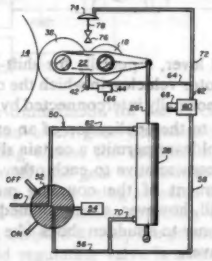
A drive assembly for a starter motor used in starting an internal combustion engine is provided including a rotatable shaft extending from the motor housing with a threaded portion. A tubular driving member is employed having an internal threaded portion meshing with the threaded portion of the shaft, the driving member having an external toothed portion to cooperate with part of the engine to be started. Shielding means is provided supported by one of the motor housing and driving member or both to shield a portion of the shaft extending from the motor housing to prevent foreign matter from contacting the portion of the shaft.

3,690,189

ENGINE STARTER

Paul D. Webb, Tioga, Pa., assignor to Fraser-Webb Corporation

Filed Sept. 23, 1970, Ser. No. 74,695
Int. Cl. F01n 7/08
U.S. Cl. 74—8 2 Claims



A device for applying a large torque to start a large engine. A member pivoting about the axis of a drive gear has an idler gear pivotally mounted on it which is in mesh with the drive gear so that when the member is rotated about the axis of the pinion gear, the idler gear is brought into contact with the fly wheel gear on the engine so that it can be turned by the drive gear to start the engine.

3,690,190

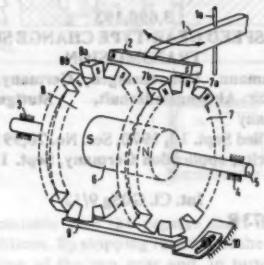
Patent Not Issued For This Number

3,690,191

DEVICE FOR CONVERTING A RECIPROCATING MOTION INTO A STEPWISE ROTARY MOTION

Hanns Ott, Harsorfferstr. 44, Nurnberg, Germany

Filed Oct. 21, 1971, Ser. No. 191,209
Claims priority, application Germany, Oct. 22, 1970, P 20 51 764.0
Int. Cl. H02k 7/06
U.S. Cl. 74—142 5 Claims



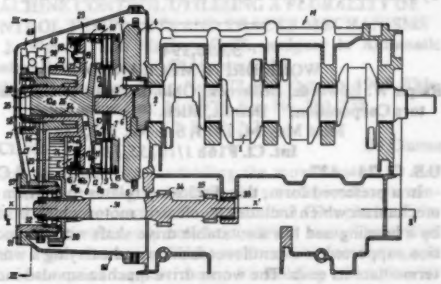
A device for converting reciprocating motion into stepwise rotary motion has a rotatable shaft, a first pole wheel mounted on the shaft and having a plurality of north poles equally spaced one from the other so as to define a corresponding plurality of pole gaps, a second pole wheel mounted on the shaft axially of the first pole wheel and having a plurality of south poles equally spaced one from the other so as to also define a corresponding plurality of pole gaps, and a member for magnetically coupling the first pole wheel with the second pole wheel. An actuating magnet is provided as is also a drive device connected to the actuating magnet for imparting to the latter a reciprocating radial motion in a region outside the pole wheels and in a direction substantially parallel to the shaft.

3,690,192

TRANSMISSION MECHANISMS FOR AUTOMOBILES AND OTHER VEHICLES

Pierre Bouthors, and Philippe Quemerais, both of Billancourt, France, assignors to Regie Nationale des Usines Renault, Billancourt and Automobiles Peugeot, Paris, France

Filed Oct. 6, 1970, Ser. No. 78,506
Claims priority, application France, Oct. 29, 1969, 6936037
Int. Cl. F16h 15/08
U.S. Cl. 74—199 6 Claims



A transmission mechanism for automotive vehicles or other machines, which comprises a drive shaft, a friction-type, single-stage variable-speed system comprising internally tangent male and female disks adapted to be clamped together by means of a fluid-actuated piston, wherein at least one driving male disk rigid with the input shaft of the variable-speed system is interposed between female disks rotatably solid with

a drum adapted to rotate about the axis of said male and female disks, a disk clutch adapted to be engaged by the action of a plate, dog means permitting the change from forward motion to reverse motion of the vehicle, said transmission mechanism being characterized in that the piston for clamping the variable-speed disks is axially movable within the bore of said drum carrying the clutch disks and the driven disks of said variable-speed system, and that said drum is axially movable in relation to said clutch disk clamping plate.

3,690,193

FIVE-SPEED GEAR-TYPE CHANGE SPEED TRANSMISSION

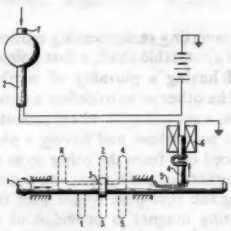
Fritz A. Naumann, Unterensingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Sept. 10, 1970, Ser. No. 70,991

Claims priority, application Germany, Sept. 12, 1969, P 19 46 219.2

Int. Cl. G05g 9/12

U.S. Cl. 74—473 R **10 Claims**



A five-speed change-speed transmission, especially for sports-type vehicles, in which the shifting channels for fourth and fifth speed are disposed in one plane of rotation of the shifting shaft, the shifting channels for the second and third speeds are disposed in a second plane of rotation of the shifting shaft, the shifting channel for the first speed is disposed in a third plane of rotation adjacent to the second plane of rotation and the shifting channel for a reverse speed is disposed in a fourth plane of rotation of the shifting shaft, offset to the third plane of rotation in the axial direction of the shifting shaft; during a shifting down operation, the shifting shaft is normally prevented from reaching the third or fourth plane of rotation by a locking device which can be rendered ineffectual by operation of a push-button or the like at the shifting lever.

3,690,194

WORK DRIVE MECHANISM

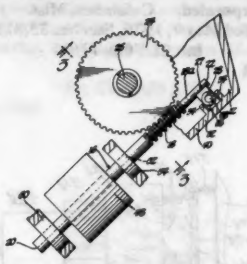
Ralph W. Edwards, Bellbrook, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed May 14, 1971, Ser. No. 143,534

Int. Cl. F16h 1/16, 55/18

U.S. Cl. 74—427 **3 Claims**

In a preferred form, this disclosure relates to a worm drive mechanism which includes an electric motor which is carried by a housing and has a rotatable drive shaft with an end portion supported in a cantilever fashion and carrying a worm intermediate its ends. The worm drive mechanism also includes a worm wheel which is in meshed engagement with the worm and is fixedly supported upon a rotatably mounted output shaft. The worm drive mechanism further includes a stabilizer wedge which substantially prevents deflection of the drive shaft away from the worm wheel by engaging the cantilever supported end portion of the drive shaft with a tapered surface. The stabilizer wedge is slidably supported for movement toward and from the drive shaft to allow the tapered surface to engage the end portion at a location diametrically opposite its engagement with the worm wheel, and a spring means biases



the stabilizer wedge toward the drive shaft to maintain the tapered surface in engagement with the drive shaft.

3,690,195

SAFETY CONTROL LEVER

Thomas Wilfert, Friedhofstrasse 21, 7021 Stetten, Germany

Filed Dec. 31, 1970, Ser. No. 103,058

Claims priority, application Germany, March 19, 1970, P 20 13 164.0

Int. Cl. G05g 9/00

U.S. Cl. 74—473 R **9 Claims**

A safety control lever, especially for shift-stick controlled transmissions of motor vehicles, in which the control lever has two lever sections normally interconnected by coupling means which in response to the application of an excessive shifting force to the control lever permits a certain sliding movement of the coupling means relative to each other against a spring without disengagement of the coupling means, while the coupling means will, however, almost immediately disengage each other in response to a sudden shock-like excessive action upon the control lever.

3,690,196

GEARED DRIVES INCORPORATING FLUID COUPLINGS

John Bilton, Hampton, England, assignor to Fluidrive Engineering Company Limited, Middlesex, England

Filed May 12, 1971, Ser. No. 142,682

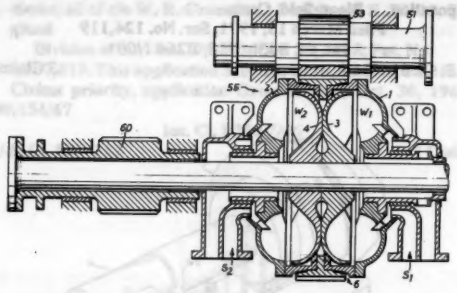
Claims priority, application Great Britain, May 13, 1970, 23,240/70

Int. Cl. F16h 47/06; F16d 33/00; F16h 57/04

U.S. Cl. 74—730 **6 Claims**

A double-circuit fluid coupling has a rotating outer casing formed in two similar halves between which is clamped an internal flange of a gear rim formed with wide external gear teeth. Only the middle portions of the gear ring and casing are in contact while the axially outer portions are spaced by air

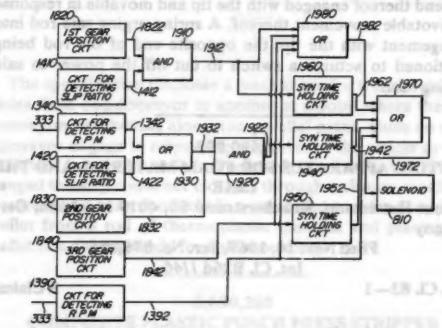
gaps from the casing to form a much longer heat path from the coupling circuits to the gear rim and thereby prevent distortion of the gear rim as the result of uneven expansion due to sudden heat generation in the working circuits during maneuvring.



3,690,197
AUTOMATIC TRANSMISSION

Masaharu Sumiyoshi, Toyota; Shigeru Sakakibara, Chita-gun; Hisato Wakamatsu, Kariya, and Takaaki Kato, Toyohashi, all of Japan, assignors to Nippondenso Kabushiki Kaisha, Aichi-ken, Japan

Filed June 12, 1970, Ser. No. 45,779
Claims priority, application Japan, July 18, 1969, 44/57186
Int. Cl. F16h *47/04, 5/42*
U.S. Cl. 74—731 **3 Claims**



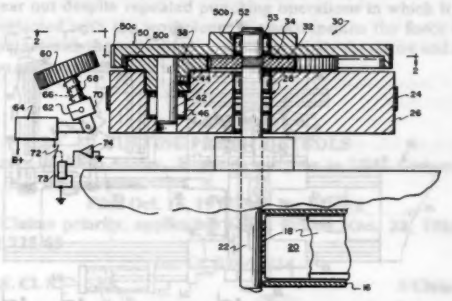
An automatic transmission for use in cars in combination with a torque-converter, gear transmission mechanism and frictional coupling means for establishing a required gear meshing relation of said gear transmission mechanism, said frictional coupling means being actuated by working oil supplied through a hydraulically actuating circuit including a regulating valve adapted to vary the pressure of said working oil, wherein said regulating valve is actuated to reduce the pressure of the working oil in response to a predetermined slip ratio of said torque-converter and/or a predetermined gear position of said transmission mechanism and/or a predetermined car-speed so that an impact due to variation of torque to be transmitted is eliminated.

3,690,198
FAST FORWARD TAPE ADVANCE

William B. Huber, Park Forest, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Nov. 4, 1970, Ser. No. 86,791
Int. Cl. F16h *3/44*
U.S. Cl. 74—785 **7 Claims**

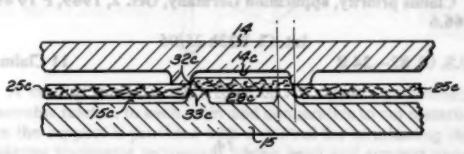
A cartridge type magnetic tape recorder has a planetary gearing mechanism for increasing the speed of rotation of the capstan shaft, to increase the speed of transport of the tape within a cartridge without increasing the speed of rotation of the associated drive motor. The planetary gearing mechanism has a sun gear secured to the capstan shaft and together with a ring gear is rotatable with the capstan shaft during normal operating conditions. By stopping rotation of the ring gear, the speed of rotation of the sun gear and, in turn, the capstan shaft, will increase to transport the tape at a faster rate.



3,690,199
CHEMICAL HONING OF DIES

Albert J. Sarka, Fairview Park, Ohio, assignor to Harris-Intertype Corporation, Cleveland, Ohio

Filed Oct. 15, 1970, Ser. No. 80,831
Int. Cl. B21k *5/20*
U.S. Cl. 76—107 C **5 Claims**



Cooperating male and female cutting and creasing dies for blanking cartons and the like are produced by a chemical milling process and which process includes a final honing step which removes the sharp corners on the lands of the dies prior to installation thereby readying the dies for immediate full speed use on the machine.

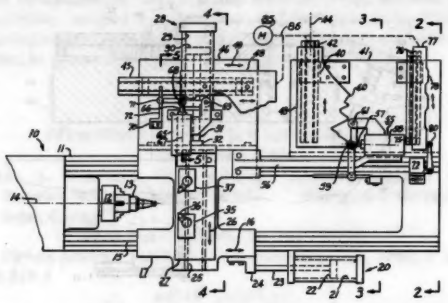
3,690,200
MACHINE CONTROL UTILIZING A PLURALITY OF CONTROL TEMPLATES AND TRACER MECHANISMS

Paul J. Weaver, San Marino, Calif., assignor to Automatic Control Systems, Inc., El Monte, Calif.

Continuation-in-part of Ser. No. 872,492, Oct. 30, 1969. This application Dec. 24, 1970, Ser. No. 101,338
Int. Cl. B23b *3/28*
U.S. Cl. 82—14 A **23 Claims**

A control system for controlling the movement of an element such as a cutting tool relative to a workpiece, maintaining the tool under continuous path control. The plane of the path relates to two non-parallel coordinate axes. The system includes a pair of working slides, one for each of said axes, and a pair of template support means for holding a template so that a reference surface bearing positioning information moves past a respective tracer mechanism on a path normal to the control motion of the tracer mechanism. Motor means under the control of respective tracer valves move the working slides so as to cause the cutting tool to form a desired contour in the workpiece. The templates are driven synchronously, and their reference surfaces are of indefinite length whereby a plurality of cutting passes can be made with

one set of templates. If desired, another synchronously driven template is provided to exert concurrent control over other machine functions such as spindle speeds, pumping actions,



and feed rate. The invention comprehends a means for designing the templates, and a machine controlled by the resulting templates.

3,690,201

ADJUSTING APPARATUS FOR INDEXIBLE TOOL TURRETS

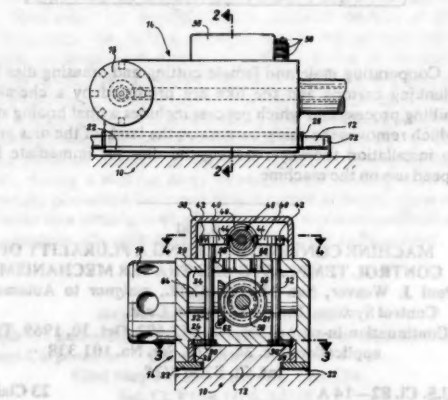
Helmut Link, Esslingen/Neckar, Germany, assignor to Index-Werke KG, Hahn & Tessky, Esslingen/Neckar, Germany

Filed Sept. 17, 1970, Ser. No. 73,037

Claims priority, application Germany, Oct. 2, 1969, P 19 49 766.6

Int. Cl. B23b *25/06*

U.S. Cl. 82—24 R **11 Claims**



A machine tool wherein the frame supports a reciprocable carriage which in turn supports an indexible tool turret. The carriage is adjustable sideways with reference to the frame by means of two wedge-like shifting members which flank the ways for the carriage and normally share the movements of the carriage lengthwise of the ways. When the carriage is to be shifted sideways, the shifting members are caused to move relative to the carriage by means of a transmission which is mounted in the interior of the carriage and receives motion from an axially reciprocable sleeve which is movable into abutment with one of several axially adjustable bolts, one for each angular position of the turret.

3,690,202

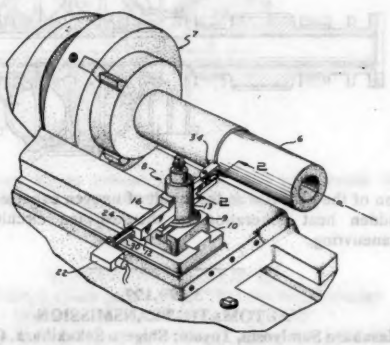
SENSOR CONTROL FOR TOOL BREAKAGE

Walter J. Tebo, Chicopee Falls, Mass., assignor to Emhart Corporation, Bloomfield, Conn.

Filed March 15, 1971, Ser. No. 124,119

Int. Cl. B23b *3/38*; B26d *1/00*

U.S. Cl. 82—34 A **3 Claims**



Mechanical sensor for stopping the operation of a cutting tool in the event of tool bit breakage, in which a pivotable tip is carried by a tool holder with its lower extremity adjacent the tip of the cutting bit. A spring releasably urges the pivotable tip in a given direction, and a rod carried by the holder with one end thereof engaged with the tip and movable in response to pivotable movement thereof. A spring urging said rod into engagement with the tip, the opposite end of the rod being positioned to actuate a switch to cut off the power to said cutting tool.

3,690,203

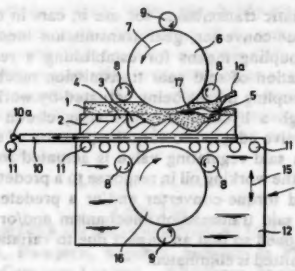
CUTTING APPARATUS FOR FOAM MATERIAL AND THE LIKE

Helmut Huttemann, Krischerstrasse 80, 4019 Monheim, Germany

Filed Nov. 14, 1969, Ser. No. 876,805

Int. Cl. B26d *1/46*

U.S. Cl. 83—1 **3 Claims**



Apparatus for cutting recesses into plates or the like of foam material having parallel top and bottom planar surfaces. The foam bodies are moved into a cutting area and compressed, with the compressing means including a pressure roller engaging the foam plate and pressing the same into recesses or openings formed in a vertically opposed counterpressure device, with cutting means cutting off the upper layer of the compressed foam material.

3,690,204

TRANSFER MECHANISM

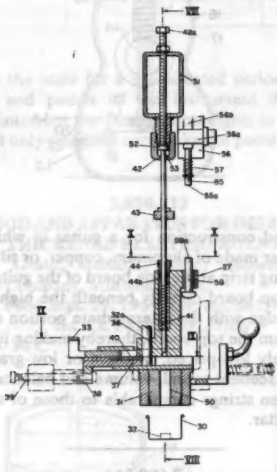
Gordon Asquith Deakin; Alan Eastwood, and Gordon Vinnucimbe, all of c/o W. R. Grace Ltd., Park Royal N. W. 10, England

Division of Ser. No. 771,203, Oct. 28, 1968, Pat. No. 3,587,819. This application May 18, 1970, Ser. No. 35,616

Claims priority, application Great Britain, Oct. 30, 1967, 49,134/67

Int. Cl. B26d 7/06

U.S. Cl. 83—112 **1 Claim**



The specification discloses a mechanism for transferring articles from one conveyor to another at a point where the two conveyors are moving along non-parallel paths. Studs on each conveyor engage in respective apertures in the article to support and locate the article. Preferably the conveyors are arranged to carry container closures through a closure moulding device which may also include a combined tool for severing a pellet from a rod of thermoplastic material and placing the pellet in a closure ready for cold moulding.

3,690,205

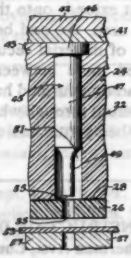
COMPOSITE PLASTIC PUNCH PRESS STRIPPER

Richard H. Brown, Williamsville, N.Y., assignor to Pivot Punch Corporation, Lockport, N.Y.

Filed July 15, 1970, Ser. No. 54,920

Int. Cl. B26d 7/06

U.S. Cl. 83—139 **9 Claims**



A composite plastic stripper for stripping a punched workpiece from a punch of a punch press or similar machine as the punch is withdrawn, includes a hollow tubular polyurethane body portion, a nylon end cap and an adhesive fastening the nylon and polyurethane parts together. The resiliency and flowability of the polyurethane tubular portion provides a spring effect which holds the work to a support while the punch is being withdrawn. The nylon cap, which is harder than the polyurethane, is a long lasting contact part which does not wear out despite repeated punching operations in which it is contacted with the workpiece. It also transmits the force of contact with the workpiece over substantially the entire end of the polyurethane tube to which it is sealed.

3,690,206

CUTTING PRESS CONTROLS

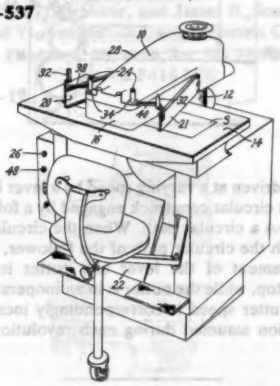
Harry Pickles, Anstey, England, assignor to USM Corporation, Boston, Mass.

Filed Oct. 16, 1970, Ser. No. 81,252

Claims priority, application Great Britain, Oct. 22, 1969, 51,725/69

Int. Cl. B26d 7/24

U.S. Cl. 83—537 **5 Claims**



A cutting press having a head and a support transversely movable relative to each other and cooperative to cut material on the support is provided with a control for terminating the relative transverse movement of the head and support upon contact with an obstruction in the path of the movement. The control locates the head relative to the support over a desired area of the support and prevents damage to the obstruction or the press.

3,690,207

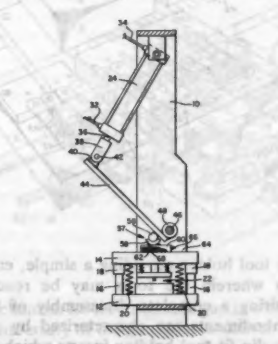
PRESS

Francis J. McCabe, Regency Woods H-16, Doylestown, Pa.

Filed Aug. 31, 1970, Ser. No. 68,406

Int. Cl. B26d 5/08; B30b 1/08

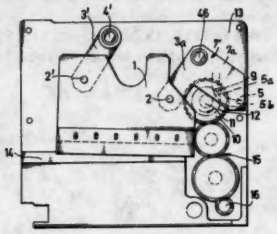
U.S. Cl. 83—627 **10 Claims**



A fluid piston actuated press is provided with a lever arm and a bearing means for transmitting and amplifying the force

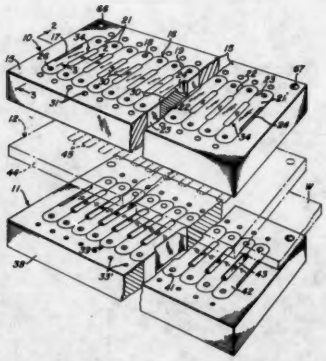
exerted by the piston to the movable parts of the press and the work piece.

3,690,208
VARIABLE SPEED DRIVE MECHANISM
Hans Muller, Zofinger, Switzerland, assignor to Grapha Maschinefabrik Hans Muller A. G., Zofingen, Switzerland
Filed Dec. 29, 1970, Ser. No. 102,485
Claims priority, application Switzerland, Dec. 29, 1969, 19332/69
Int. Cl. B26d *5/08*
U.S. Cl. 83—643 9 Claims



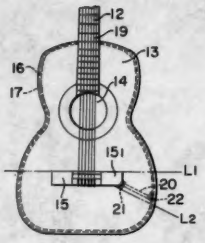
A cutter is driven at a varying speed by a lever having a substantially part circular cam track engaged by a follower driven to rotate about a circular path. When the circular cam track coincides with the circular path of the follower, the speed of angular movement of the lever and cutter is reduced, if desired to a stop, while the cutter is in an inoperative position, so that the cutter speed is correspondingly increased in the cutting position assumed during each revolution of the follower.

3,690,209
DIE-ASSEMBLY
Robert J. Gargrave, 4714 James Hill Rd., Dayton, Ohio; Robert E. Greene, 4970 Harwich Dr., Dayton, Ohio, and Karl A. Keyes, 554 Torlage Dr., Dayton, Ohio
Filed Sept. 25, 1969, Ser. No. 861,030
Int. Cl. B26f *1/14*
U.S. Cl. 83—687 23 Claims



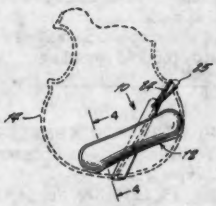
A multiple tool holder providing a simple, easily serviced die assembly wherein the tools may be readily replaced without requiring a complete disassembly of the die unit. Preferred embodiments are characterized by a continuous frame having slip fit tool holding inserts which by reason of relating contoured surfaces are precisely positioned and together form the die or holding bed and define thereby the precise position of the respectively required tools.

3,690,210
GUITAR
Masaru Imai, 22-4, 3-chome, Higashinakano, and Tokio Ohkawa, 11-10, 4-chome, Higashinakano, both of Nakano-ku, Tokyo, Japan
Filed Dec. 1, 1970, Ser. No. 93,948
Claims priority, application Japan, Dec. 10, 1969, 44/99287
Int. Cl. G10d *1/08, 3/02*
U.S. Cl. 84—267 4 Claims



An improved construction for a guitar in which an elongated sound bar made of aluminum, copper, or silver is passed between a lining strip at the side board of the guitar and a part fixed to the top board directly beneath the high-pitch-tuned end of the bridge with the intermediate portion of the sound bar spaced from the top board, thereby making it possible for a comparatively low-priced, medium or low-grade guitar to produce the excellent sound, volume and balanced tones and sounds between strings comparable to those of an expensive high-grade guitar.

3,690,211
LONG SHOULDER PAD
Dorothy Dolores Long, 1322 N. 22nd St., Phoenix, Ariz.
Filed Dec. 7, 1970, Ser. No. 95,608
Int. Cl. G01d *1/02*
U.S. Cl. 84—280 1 Claim

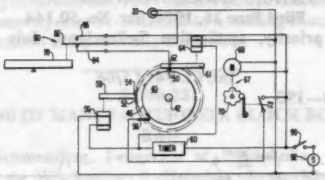


An adjustable shoulder pad for a violin or viola, the pad being of a configuration and size so that it gives support not only at the shoulder but extends onto the chest so as to gain needed support in this area, the pad being comprised of an upper and lower panel of material secured together at their edges, a pocket formed there between being stuffed with Dacron material, the pad thus formed having a diagonally extending loop secured thereto through which a leather strap extends, the leather strap being attachable directly to the violin or viola.

3,690,212
PIANO INSTRUCTION DEVICE
John P. Colburn, 360 Sherman Ave., Council Bluffs, Iowa
Filed Dec. 17, 1970, Ser. No. 99,027
Int. Cl. G09b *15/08*
U.S. Cl. 84—478 7 Claims

A device for teaching pupils to read music and identify notes on a key-board instrument and to promote proficiency

in the performance of musical exercises is presented. The device includes a scale representation visually displaying notes as flashing lights, controlled by an electro-mechanical signal device for successively displaying pre-selected combinations



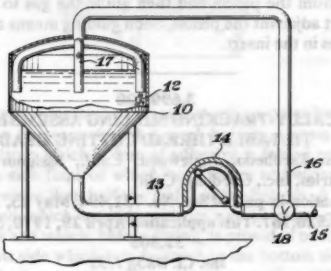
of notes on the scale for a pre-selected period of time. The key-board, and pedals of the instrument if desired, are adapted to interrupt the flashing note-lights to display a continuous light only when the correct key or pedal is depressed.

3,690,213

METHOD AND APPARATUS FOR DELIVERING THICKENED BLASTING AGENTS

Charles H. Grant, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sept. 29, 1969, Ser. No. 861,923
Int. Cl. F42b *3/00, 37/00*
U.S. Cl. 86—20 C **3 Claims**



Improved methods and apparatus are provided for pumping thickened slurry or liquid blasting agents through confining conduits for blasting geologic formations. Thickened slurry and liquid blasting agents are prepared containing gelling or thickening agents which produce thickened solutions having thixotropic properties. Increased shear is applied to the thickened blasting agents, e.g. they are kneaded, such as for example, in a pumper truck having means for mechanically disturbing the explosive, to temporarily produce a more flowable composition which is pumpable. The explosive is then immediately pumped into position, e.g. boreholes, wells. Upon standing under ambient conditions the blasting agent becomes more viscous thus providing the necessary properties of water resistance and settling stability.

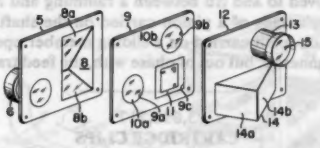
3,690,214

REAL IMAGE VIEWFINDER EMPLOYING ROOF-TYPE REFLECTING MIRROR ASSEMBLIES

Hisanori Ataka, Kawasaki, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Sept. 4, 1970, Ser. No. 69,535
Claims priority, application Japan, Sept. 5, 1969, 44/83927
Int. Cl. G03b *13/02*
U.S. Cl. 88—1.5 R **10 Claims**

A viewfinder utilizing two roof-type reflecting mirror assemblies as an erecting system to produce an erect image wherein the roof-type reflecting mirror assemblies are hollow right prisms whose inner hypotenuse face or two side faces are made into the reflecting surfaces and respectively mounted on suitable apertured plates which are connected to an intermediate apertured plate so that the combinations of these assemblies may deviate the beam of light in a similar manner as the prisms. Wide and brilliant field and high magnification may be attained.

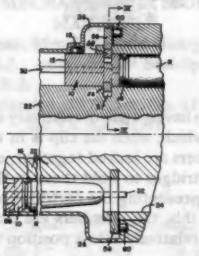


3,690,215

BOLT LOCKING SYSTEM

Burton P. Clark, Colchester, and James D. Scanlon, Burlington, both of Vt., assignors to General Electric Company

Filed Sept. 28, 1970, Ser. No. 75,980
Int. Cl. F41d *7/00*
U.S. Cl. 89—12 **8 Claims**



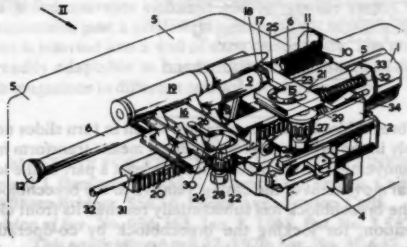
A Gatling type gun includes a plurality of bolts and respective cross-slides, each of which is cam controlled and entirely encircles the bolt in the lock position.

3,690,216

LOADING MECHANISMS FOR GUNS

Norman Treyor Brint, Waltham Abbey, England, assignor to The Secretary of State for Defense in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, England

Filed Aug. 22, 1968, Ser. No. 754,748
Int. Cl. F41d *9/00*
U.S. Cl. 89—33 A **12 Claims**



A feed mechanism for an automatic gun in which a feed tray is moved transversely of the gun axis, to deliver a round, by a pinion carrying an eccentrically located member engaging in a guideway carried by the tray; which pinion is actuated by a rack moved axially against a spring, by the gun during its run-out after recoil; the rack being then disengaged from the gun

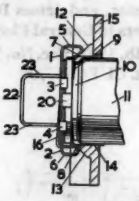
whereafter the mechanism is returned to its initial position by the action of the spring. A rammer claw, carried at the end of an arm rotatable about a shaft above and parallel to the gun axis, is moved to and fro between a ramming and a receiving position by means of a pinion carried on the shaft and actuated by rack teeth carried on a sliding member operated in a similar manner to, but out of phase with, the feed tray.

3,690,217

CARTRIDGE CLIPS

Norman Trevor Brint, Essex, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, Whitehall, London S.W. 1, England

Filed Nov. 28, 1967, Ser. No. 686,355
Int. Cl. F42d 9/00
U.S. Cl. 89—34 10 Claims



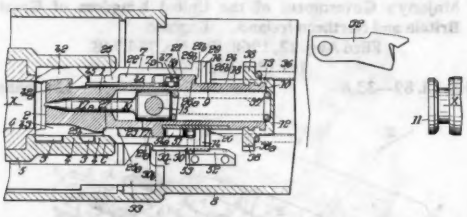
A cartridge clip having a pair of relatively slidable members with projections which, when the clip is in the loaded condition and the members are locked together, engage the rims or grooves of the cartridges to hold these in the clip, but, when the clip is used in presenting the cartridge to the gun or to an associated part of this, the members are unlocked from each other and are slid relatively into a position to release the cartridge from the clip.

3,690,218

BREECH MECHANISM FOR AUTOMATIC OR SEMI-AUTOMATIC GUNS

Bernard Maillard, 14, Chateau Banquet, Geneva, Switzerland

Division of Ser. No. 717,524, April 1, 1968, Pat. No. 3,447,418. This application Jan. 6, 1970, Ser. No. 928
Int. Cl. F41d 3/06
U.S. Cl. 89—185 7 Claims



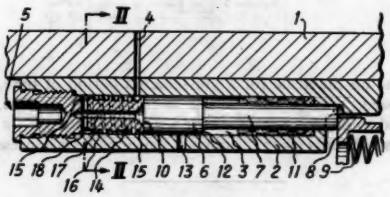
The breechblock slides in a casing which in turn slides non-rotatably in the breechcase. Mechanical means transform into rotary movement of the breechblock at least a part of the longitudinal movement of the casing, relative to the breechblock, when the breechblock has substantially reached its front closing position, for locking the breechblock by co-operation between the barrel and locking lugs formed on the breechblock. At least a portion of each one of (a) the external surface of the locking lugs, (b) the external surface of the casing and (c) the internal surface of the breechcase, lies on a common geometrical cylinder of revolution such that the breechblock is guided along the internal surface of the breechcase by the engagement both of the external surface of the lugs and of the external surface of the casing on the internal surface of the breechcase.

3,690,219

GAS-OPERATED AUTOMATIC FIREARM HAVING THERMAL FIRING RATE CONTROL

Ernst Muhlemann, Bruun, and Jean Eskild, Zurich, both of Switzerland, assignors to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG, Zurich, Switzerland

Filed June 26, 1970, Ser. No. 50,144
Claims priority, application Switzerland, July 1, 1969, 1004/69
Int. Cl. F41d 5/08
U.S. Cl. 89—193 3 Claims



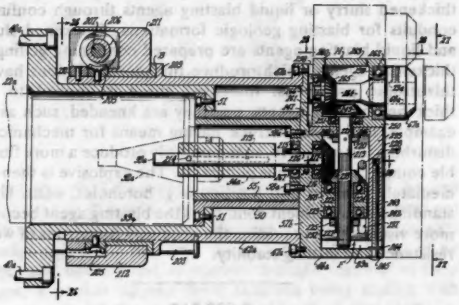
A gas operated automatic firearm having a breech casing with a cylindrical chamber and a barrel having a gas passage communicating with the cylindrical chamber. A piston is in the chamber and an insert closes one end of the chamber. Means guide the combustion gas from the passage into the chamber at the end nearest the piston. Such means guide the gas along a path extending first towards the end of the insert remote from the piston and then guide the gas to the end of the insert adjacent the piston. Such guiding means are grooves and bores in the insert.

3,690,220

HELICALLY-TRACKING MILLING ASSEMBLY WITH TILTABLE THREAD CUTTING HEAD

Francisco Escobedo, Inglewood, Calif., assignor to Fresco Industries, Inc., Gardena, Calif.

Continuation-in-part of Ser. No. 731,494, May 23, 1968, Pat. No. 3,526,167. This application April 29, 1970, Ser. No. 32,805
Int. Cl. B23g 1/32
U.S. Cl. 90—17 8 Claims



An assembly for positioning and operating a milling tool or thread-forming rotary cutter, either within or external to a workpiece such as a cylinder or tube, which positioning is of especial value when the workpiece itself is inconvenient to move or rotate due to size or shape. The cutting head can follow a helical path of selected pitch provided by interchangeable pairs of threadedly engaged guide cylinders carried by telescopic members, so as to transfer such thread pattern to the workpiece. By transversely extensible gear means (such as splined shaft-bevel gear units or split gear trains) a transverse carriage which carries the cutting-positioning head can adjust the latter to different internal or external radii of the workpiece. In addition, by adjustable tilting of the positioning head,

it can carry a rotary cutter of smaller diameter and hence greater cutting force; such head can be set at any angle within 360° rotation from the axis of the transverse carriage. Thus the rotary cutter can be set to the same inclination as the track of the thread being cut. The direction of rotary drive can be completely reversed, i.e., 180°. As one power source, the positioning assembly can be attached to a milling machine, or it can be operated independently thereof.

3,690,221

METHOD OF MANUFACTURING A BLOCK BOTTOM BAG

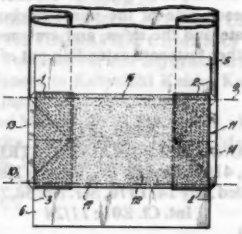
Herbert Schmedding, Lengerich of Westphalia, Germany, assignor to Windmoller & Holscher, Lengerich of Westphalia, Germany

Filed July 2, 1970, Ser. No. 51,893

Claims priority, application Germany, July 8, 1969, P 19 34 642.0

Int. Cl. B31b *49/04*

U.S. Cl. 93—35 RB 6 Claims



According to a method of manufacturing a cross bottom or block bottom bag or sack with a stuck bottom, a cross bottom or block bottom which is free of adhesive is folded on a tube portion, the side flaps of which bottom are not wider or are only a little wider than half the width of the bottom. A bottom sheet is fitted which extends with its end portions over the corner tucks and which, before fitting, is provided over the entire area of its side which is to be stuck to the bottom side flaps with an adhesive coating. This adhesive coating still has a moistening capacity sufficient to moisten the cooperating surfaces when the bottom sheet is fitted. Then the bottom side flaps and the bottom sheet are pressed against each other.

In a cross bottom or block bottom bag or sack with a bottom sheet and bottom side flaps which do not overlap or only overlap over a narrow region, the bottom sheet is arranged within the bottom. Said bottom sheet is stuck with its end portions to the outside of the corner tucks and extends at least from one bottom flap fold to the other and has an adhesive coating which was applied before insertion of the bottom sheet. The adhesive coating is transferred by moistening from the bottom sheet to the outside of the corner tucks and the insides of the bottom side flaps.

3,690,222

DEVICE FOR CLOSING AND SECURING CARTON FLAPS

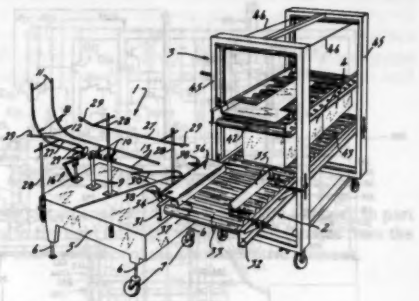
Paul H. Schroeder, P.O. Box 455, Burlington, Wis.

Filed July 10, 1970, Ser. No. 53,868

Int. Cl. B31b *1/36*; B65b *43/00*

U.S. Cl. 93—52 3 Claims

A device for use in manually handling shipping cartons include transfer rails having vertical entrance ends which curve into horizontal portions downstream for closing the transversely connected carton bottom flaps. A gluing assembly below the rails is actuatable, at a minimum, by the downward springback of said flaps to apply glue thereto. The glue applicator head is pivotally mounted to assure uniform glue application. A plow closes the longitudinally connected carton bottom flaps, and the still empty carton moves into a packing station which includes gripping means for holding the carton against vertical movement due to spring-back of the bottom flaps. The



carton is packed, the top flaps are then closed and glued, and the carton moved through a compression section.

3,690,223

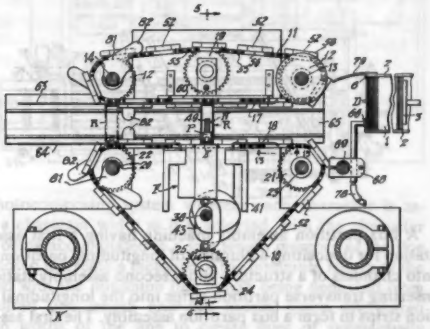
CARTON FEED MECHANISM FOR SPOUT INSERTING MACHINE

Milton H. Klausmann, Mendham, and Henry J. Brucker, Summit, both of N.J., assignors to Seal-Spout Corporation, Liberty Corner, N.J.

Filed March 1, 1971, Ser. No. 119,539

Int. Cl. B31b *1/76*

U.S. Cl. 93—53 R 6 Claims



Combined with a magazine from which flat-folded carton blanks are advanced step-by-step, is a machine for withdrawing the leading blank from the magazine and simultaneously unfolding and erecting the blank into a carton body between juxtaposed conveyor elements which carry the carton bodies in succession past a predetermined station at which a pouring spout is inserted into a wall of each carton body. The machine is readily adaptable to handle different cartons and for use with magazines in different relations to the machine.

3,690,224

MACHINE FOR ERECTING LINED CONTAINERS

Edward J. Derderian, 4515 N. Wilson Ave., Fresno, Calif., and William Bridger, 5567 S. Locan Ave., Fowler, Calif.

Division of Ser. No. 696,263, Jan. 8, 1968, Pat. No. 3,537,361.

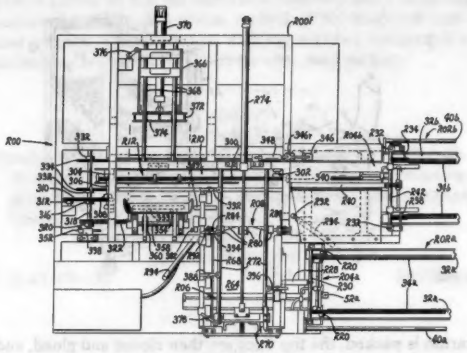
This application April 22, 1970, Ser. No. 38,642

Int. Cl. B31b *7/26*, *1/62*; B65b *41/18*

U.S. Cl. 93—36.01 4 Claims

A machine for assembling container forms in a telescoped relationship for providing lined containers. The machine is characterized by a plurality of magazines for feeding knocked-down, prescored container forms, in an on-edge orientation, pneumatically operable transport means for extracting the

forms from the magazines, erecting the forms into a tubular configuration, telescopically uniting said forms, and flap



manipulating means for closing at least one end of the forms for thus providing a lined container.

3,690,225

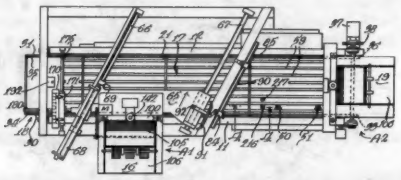
BOX PARTITION ASSEMBLY MACHINE

Alfred Monaco, Glenview, and Arthur L. Monaco, Norridge, both of Ill., assignors to Moser Box Partition Co., Inc.

Filed Feb. 22, 1971, Ser. No. 117,351

Int. Cl. B31b *1/00*

U.S. Cl. 93—37 R **18 Claims**



A box partition assembly machine having a first assembly station for depositing a plurality of longitudinal partition strips into channels of a structure and a second assembly station for inserting transverse partition strips into the longitudinal partition strips to form a box partition assembly. The first assembly station has a magazine supporting a supply of longitudinal partition strips and which moves from front to rear of the machine and intermittently deposits a longitudinal partition strip into each of a selected number of guide channels under the control of a template which may be a transverse partition strip. The magazine has a continuous, smooth motion for optimum operation. The machine is constructed for easy set-up to handle a variety of partition strips both as to the dimensions thereof as well as to the spacing of the slots in the partition strips and it is also constructed to provide for maximum speed of operation. The machine has partition ejecting structure associated with each magazine including bite elements which can be simply adjusted for the particular partition strips to be ejected.

3,690,226

ELASTOMERIC EXPANSION JOINT FOR BRIDGES AND OTHER STRUCTURES

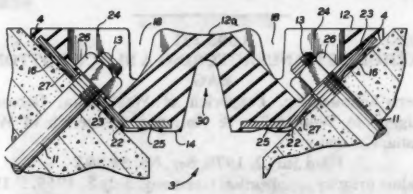
Richard D. Hein, 179 Shady Lane Dr., Wabash, Ind.

Filed Sept. 9, 1970, Ser. No. 70,739

Int. Cl. E01c *11/10*

U.S. Cl. 94—18 **5 Claims**

A roadway expansion joint is used in an expansion gap between adjacent sections of a bridge, parking deck, or other suitable structure to provide an uninterrupted road surface while permitting the structure to expand and contract when subjected to thermal changes. The joint is composed of a suitable elastomeric material and has a generally flat top surface with one or more exposed, tapered longitudinally-extending expansion grooves extending toward the bottom. The sides of the joint converge from the top to the bottom at an angle of between about 30° and about 60°. The bottom of the joint is



parallel to and substantially narrower than the top and has one or more expansion grooves extending up therefrom, spaced laterally from the exposed grooves. Reinforcing plates are located along each side of the joint and bolt holes extend through the plate and the sides, and are spaced to coincide with studs or other fasteners extending out of the roadbed or bridge deck.

3,690,227

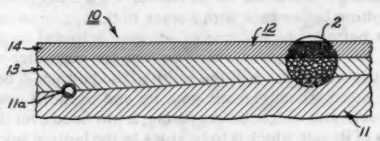
FRICTIONAL SELF-DRAINING STRUCTURE

Lloyd G. Welty, 410 S. Beverly Dr., Beverly Hills, Calif.

Filed July 14, 1970, Ser. No. 54,780

Int. Cl. E01c *11/24*

U.S. Cl. 94—33 **7 Claims**



A frictional, in situ self-draining composite structure for runway and roadway structural docking and pathway surface. The composite structure has a solid base to which is bound a porous superstratum of aggregate and resinous binder. The composite structure is fabricated by applying a first mixture containing about two to about four parts by volume of aggregate particles of crushed rock, river gravel, crushed coral, coarse sand, slag, or crushed refractory material and one part by volume of a settable resinous binder to the base section and allowing it to set, and then by applying a second mixture containing about two to about four parts by volume of scoria and/or slag particles and one part by volume of a settable resinuous binder to the first porous layer.

3,690,228

SHUTTER RELEASE DEVICE FOR AUTOMATIC EXPOSURE CAMERA

Maki Yamashita, Osaka, and Haruo Kobayashi, Sakai, both of Japan, assignors to Minolta Camera Kabushiki Kaish, Osaka, Japan

Filed March 24, 1970, Ser. No. 22,216

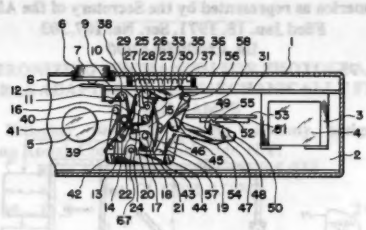
Claims priority, application Japan, March 26, 1969, 44/22969

Int. Cl. G03b *7/12*

U.S. Cl. 95—10 C **3 Claims**

A shutter release device for an automatic exposure camera in which a shutter release member is interlocked with a restraining member provided for a shutter driving member. Such inter-locking is effected through an interlocking member. The amount of displacement of an exposure meter

pointer detecting member, in the first stage of the release operation, maintains or interrupts the interlocking of the interlocking member for the shutter release member and the



restraining member for the shutter driving member, in accordance with whether the pointer is located in or out of the automatic exposure range.

3,690,229

EXPOSURE CONTROL APPARATUS FOR PHOTOGRAPHIC CAMERAS

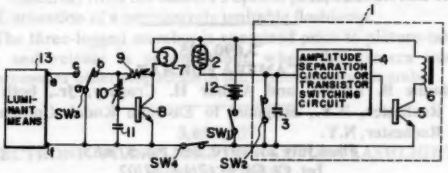
Tomio Kikuchi, Tokorozawa, and Kiyoyuki Arai, Gyoda, both of Japan, assignors to Kabushiki Kaisha Kofaru, Itabashi-ku, Tokyo, Japan

Filed May 25, 1970, Ser. No. 40,118

Claims priority, application Japan, May 30, 1969, 44/41668; June 6, 1969, 44/44411

Int. Cl. G03b 7/08, 15/03

U.S. Cl. 95—10 CT **8 Claims**



A lamp is positioned to face a photoconductive cell contained in an electronic shutter mechanism of a camera. This lamp is adapted to be lighted up prior to the luminescing of a flash device attached to the camera, by utilizing the synchronizing contacts. This luminescence from the lamp preliminarily irradiates the photoconductive cell to enhance its ability to respond to light. This arrangement not only will permit the lamp to be lighted up in association with the proper working condition of the flash device but also will enable the lamp to luminesce again at the end of a predetermined length of time from the luminescing of the flash device and also to be put out at the end of another predetermined length of time.

3,690,230

ELECTRONIC CIRCUITS FOR AUTOMATIC CAMERA CONTROLS

Chiharu Mori, Tokyo-to, and Katsumi Ota, Fukuoka, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

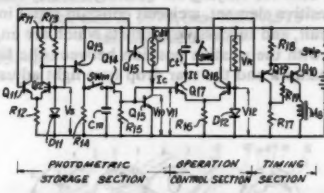
Filed Oct. 30, 1970, Ser. No. 85,400

Claims priority, application Japan, Dec. 25, 1969, 44/10331; Feb. 21, 1970, 45/15079

Int. Cl. G01j 1/44

U.S. Cl. 95—10 CT **10 Claims**

A camera provided with electronic circuitry for automatically determining the extent to which film in the camera is exposed. The electrical circuitry includes a photosensitive element for converting light intensity into a given electrical signal. Also, the electrical circuitry includes a closed loop circuit which forms that part of the electrical circuitry which determines the influence of the light intensity on the extent of the exposure of film which is automatically obtained. This



closed loop circuit enables the exposure to be obtained in part according to the light intensity without any influence from the particular characteristics of the photosensitive element.

3,690,231

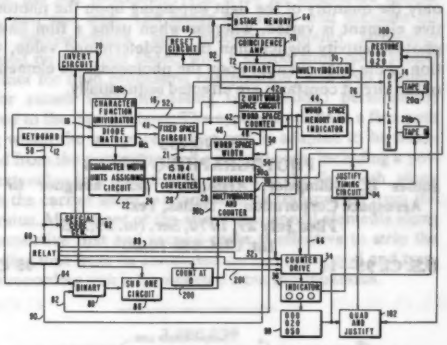
PHOTOCOMPOSITION ERROR CORRECTION SYSTEM

Leonard Storch, 175 W. 72nd St., New York, N.Y.

Filed April 15, 1971, Ser. No. 134,217

Int. Cl. B41b 23/00

U.S. Cl. 95—4.5 R **6 Claims**



A photocomposing system wherein each character is assigned a character width as it is selected, with the character widths being accumulated in a line length memory as the line is composed to create a measure of the minimum length of the line, and with the minimum line length being deducted from the desired line length and the excess space distributed between words of the line to create lines of substantially uniform length, includes apparatus permitting errors in composition to be corrected on a word-by-word basis. The one word error system includes a word length memory for accumulating the widths of characters in each word including the width of the preceding word space as they are selected, with the word length memory being reset with the beginning of each word space. When an error in composition is detected in a word being typed, the word length memory is used to restore the line length memory to its condition prior to the previous word space, so that the errored word and space can be deleted and corrected without recomposing the entire line.

3,690,232

PHOTOGRAPHIC CAMERAS

Kiju Kodaira, Tatsuno, and Hirofumi Yoshimura, Kamo, both of Japan, assignors to Yashica Company, Limited, Tokyo, Japan

Filed March 24, 1971, Ser. No. 127,531

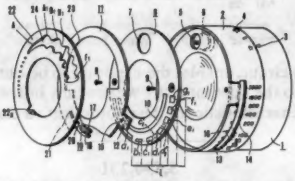
Claims priority, application Japan, March 27, 1970, 45/28718; March 27, 1970, 45/28719

Int. Cl. G03b 7/08

U.S. Cl. 95—10 CE **5 Claims**

A camera having a photosensitive element connected in an electric circuit for calculating the quantity of light exposure, a

ring rotated with the desired exposure setting condition, a tear drop type light adjusting element adjustably connected to the ring in accordance with the photosensitivity of the photographic film used for varying the quantity of light received by the photosensitive element, a circuit constant setter in the calculation circuit, and successive contacts which are engaged in accordance with the relative position between the fixed portion of the camera and the tear drop type light adjusting ele-



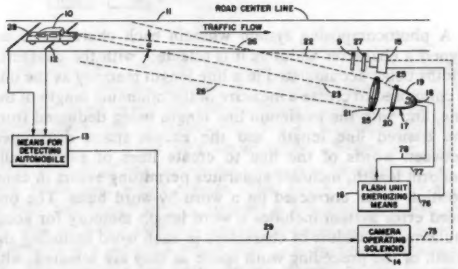
ment to control the circuit constant setter. The light adjusting element is provided with a tear drop shaped opening so shaped that when using a film having a photosensitivity less than a predetermined value, the circuits constants are not varied but only the quantity of the light impinging upon the photosensitive element is varied, whereas when using a film having a photosensitivity higher than the predetermined value, variation of the light quantity upon the photosensitive element and of the circuit constants are effected sequentially.

3,690,233

PHOTOGRAPHING MEANS

James D. Billingsley, Arlington, Tex., assignor to LTV Aerospace Corporation, Dallas, Tex.

Filed July 29, 1970, Ser. No. 59,223
Int. Cl. G03b 19/00
U.S. Cl. 95—11 15 Claims



A detecting means is responsive to a passing car to produce an indicating signal. A camera and a flash lighting unit positioned down the road from the detecting means are activated simultaneously to illuminate and photograph the oncoming car. The illumination lies primarily in a spectrum including the visible deep red, the near infra-red and the intermediate infra-red. Only the visible deep red and the near infra-red radiations are able to penetrate the infra-red filtering windshield and then reflect back to the camera through an optical filter which passes only said visible deep red, near the infra-red and the small amount of intermediate infra-red radiations that pass back through the windshield. Thus the glare from ambient light is eliminated. A film sensitized to the visible deep red and to the near infra-red radiations is employed in the camera. The aforementioned system provides an identifiable photograph of the driver's facial features either during the day or at night and without causing impairment of his vision.

3,690,234

APPARATUS FOR TAKING PHOTOGRAPHS AT TIMES OF MINIMUM IMAGE MOTION

Peter J. Costianes, Rome, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force

Filed Jan. 18, 1971, Ser. No. 107,303
Int. Cl. G03b 19/00
U.S. Cl. 95—11 1 Claim

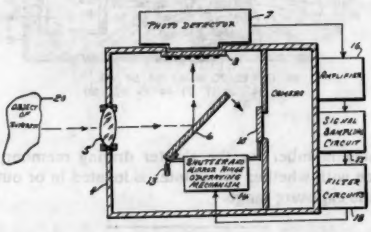


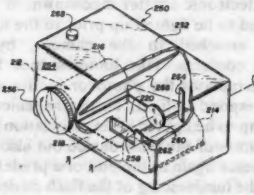
Image velocity detection means are incorporated into photographic apparatus and are utilized to activate the camera at a time of minimum image motion. Light from an object of interest passes through a photographic lens and is imaged on a mask having a periodic transmission. As the image moves across the mask, the total light reaching an integrating photodetector directly behind the mask varies as a function of time and image velocity. This variation sets up a proportional electric current which is analyzed to determine the instantaneous image velocity. When a minimum instantaneous velocity is detected a signal is generated which trips the camera shutter.

3,690,235

CAMERA FORMAT

Dianne B. Ainslie, and Arthur H. Crapsey, Jr., both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 23, 1970, Ser. No. 57,663
Int. Cl. G03b 17/17, 17/02
U.S. Cl. 95—11 R 12 Claims



Motion picture and still cameras for use with (1) a film cartridge of the type having a rectangular parallelepiped shaped casing with a minor depth dimension substantially smaller than the major length and width dimensions, an exposure opening in one of the smallest walls of the casing, and coaxial take-up and supply film rolls having their common axes parallel to the plane of the exposure opening and with (2) a film cartridge of the type having generally cylindrical supply and take-up chambers and means defining a film plane across which filmstrip may be advanced from the supply chamber to the take-up chamber, respectively. Each camera includes a housing having a plurality of walls forming a light-tight enclosure which defines a volume of generally rectangular parallelepiped shape with a minor depth dimension substantially smaller than the major length and width dimensions, the enclosure being adapted to removably receive such respective film cartridges. The cameras further include an optical system including a lens system and light reflector means for folding

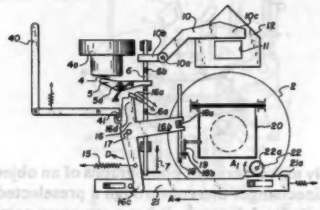
the light path from the scene along at least three optical axes to the film plane of a received cartridge. A zooming system may be imposed in at least one of the optical axes of the light path.

3,690,236

SYNCHRONIZING MECHANISM FOR PHOTOGRAPHIC CAMERAS ADAPTED TO USE MECHANICALLY FIRED FLASH LAMPS

Helmut Ettischer, Stuttgart-Wagen, Germany, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 19, 1970, Ser. No. 65,034
Int. Cl. G03b *15/04*
U.S. Cl. 95—11.5 2 Claims



A photographic camera is provided with a three-legged member which rotates rapidly upon release to synchronize several or all of the following operations:

a. initiation of automatic exposure control functioning;
b. actuation of the camera shutter;
c. displacement of the viewer mirror (single lens reflex cameras) from the camera's optical path; and
d. actuation of a percussively ignitable flashlamp.

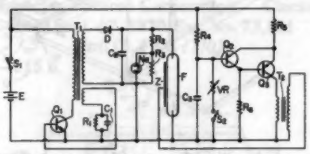
The three-legged member is energized prior to picture-taking and release is accomplished when the camera user depresses or otherwise actuates the camera release member.

3,690,237

ELECTRONIC FLASHLIGHT DEVICE FOR FLASHLIGHT PHOTOGRAPHY

Zydichi Fuwa, c/o Kabushiki Kaisha Ricoh 3-6, 1-chome, Naka Magome, Ohta-ku, Tokyo, Japan

Continuation of Ser. No. 674,780, Oct. 12, 1967, abandoned.
This application Sept. 22, 1970, Ser. No. 74,532
Int. Cl. G03b *15/05*; H05b *41/00*
U.S. Cl. 95—11.5 R 3 Claims



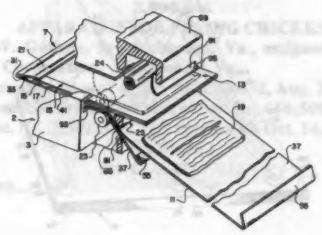
A device particularly for use with a camera having an electronic flash and a shutter but no diaphragm control so that the flash will be produced at some time before the shutter has completely opened. In order to regulate the light passing through the shutter, in one embodiment a switch is closed when the shutter begins to open to permit a capacitor to discharge through a variable resistor until its voltage reaches a point where two transistors are switched to produce a signal which enables the capacitor to discharge through a discharge tube which then produces an electronic flash. In a second embodiment, when the switch is open, a capacitor begins to charge through a variable resistor and when the capacitor has charged to a given level, a transistor switching circuit is triggered to apply a trigger signal to the flash tube.

3,690,238

STRIPPING MECHANISM

Hubert Nerwin, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 2, 1970, Ser. No. 77,515
Int. Cl. G03b *17/52*
U.S. Cl. 95—13 6 Claims



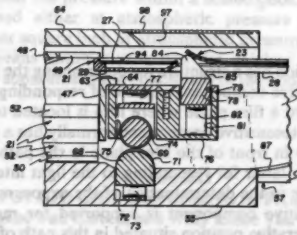
Photographic apparatus for stripping an image-recording unit of the self processing type from an associated carrier sheet, pod and trap. The image-recording unit includes integral photosensitive and process elements strippably mounted on a carrier sheet, with a cooperating pod (supply container for fluid processing composition) and trap (collector for excess fluid processing composition) permanently secured to the carrier sheet. The apparatus defines a first path along which the image-recording unit is adapted to be transported from the apparatus, and a second path, including a portion extending in a direction divergent to the first path, along which the carrier sheet is adapted to be transported from the apparatus. Movement of the above-mentioned elements along the respective first and second paths is effective to strip the recording unit from its associated carrier sheet, pod and trap, as the recording unit is transported from the apparatus.

3,690,239

PRINT STRIPPING MECHANISMS

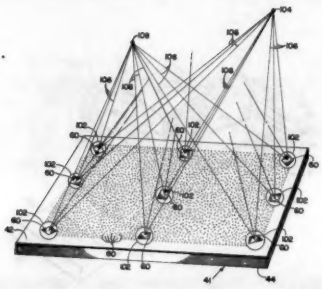
Guilford Edwin Kindig, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 2, 1971, Ser. No. 159,320
Int. Cl. G03b *17/52*
U.S. Cl. 95—13 10 Claims



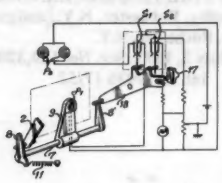
The disclosure relates to photographic cameras adapted to use self-processing film units comprising preregistered, integral image-recording portions strippably coupled to individual rigid frames. Each film unit is processed by movement between a pair of opposed pressure members in the camera, and then the image-recording portion is separated from the frame and expelled from the camera by a novel stripping mechanism that engages the recording portion and presses it out of engagement with the frame.

3,690,240
REFLECTIVE IMAGING APPARATUS
Nathan Gold, Framingham, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Oct. 22, 1970, Ser. No. 83,030
Int. Cl. G03b 19/12
U.S. Cl. 95—42 47 Claims



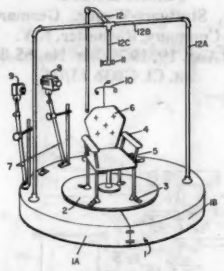
The subject invention provides a reflex camera having a novel means of image reflection for use in viewing an image, transmitted through an entrance pupil to said image reflection means, at an exit pupil remote from both said means and said entrance pupil.

3,690,241
CAMERA STRUCTURE FOR POSITIONING A PHOTOSENSITIVE COMPONENT
Katsuhiko Nomura, Kawagoeshi, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan
Filed March 23, 1971, Ser. No. 127,240
Claims priority, application Japan, April 2, 1970, 45/27434
Int. Cl. G03l 19/12
U.S. Cl. 95—42 11 Claims



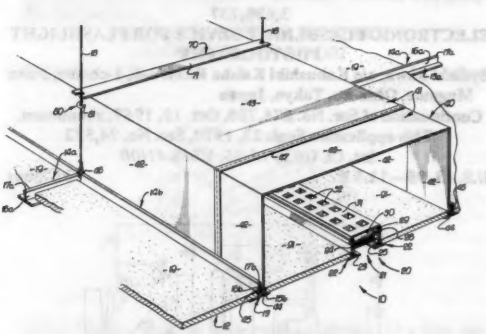
A camera which has a structure for determining the position of a photosensitive component capable of responding to light travelling toward a film plane where film is located to be exposed. The photosensitive component normally has a position located directly in front of the film plane in the path of light travelling to the latter for responding to the light intensity so as to participate in the determination of the exposure of film. The photosensitive component is supported for movement between an operative position situated in this path of light an an inoperative position displaced beyond the latter path of light. In response to tripping of the shutter, a transmission operates during the initial part of the shutter-tripping operations, prior to actual opening of the shutter, to displace the photosensitive component to an inoperative position situated beyond the path of light travelling to the film plane, so that during actual exposure the photosensitive component will not block travel of light to the film which is exposed. When the shutter is closed the photosensitive component normally is in its operative position in front of the film plane in the path of light travelling toward the latter.

3,690,242
PHOTO RECORDING ASSEMBLY
John S. Cruickshank, "Rosemount," Kintillo Road, Bridge of earn, Perth, Scotland
Filed June 22, 1970, Ser. No. 48,215
Claims priority, application Great Britain, June 20, 1969, 31,388/69
Int. Cl. G03b 27/50
U.S. Cl. 95—82 5 Claims



The assembly makes series of photographs of an object so as to record outlinechanges thereof through a preselected angular and/or longitudinal distance. It has a structure comprising an inner portion on which the object is placed, and an outer portion carrying a camera and a light projector. The inner and outer portions are rotatably relative to each other.

3,690,243
SUSPENDED CEILING FRAMEWORK SUPPORTED TROFFER AIR DISTRIBUTION SYSTEM
Robert R. Lambert, Glendora, Calif., assignor to Air Factors, Inc., Redlands, Calif.
Filed April 12, 1971, Ser. No. 133,284
Int. Cl. F24f 13/06
U.S. Cl. 98—40 D 39 Claims



The suspended ceiling framework supported troffer air distribution system has effectively continuous arrays or rows of resilient inverted channel members, each having the lower feet thereof separated in a natural state, and contracted for insertion on and between the runners of a suspended ceiling framework and over air control means extending between the runners; and has ceiling tile inserted between the runners and the air control means to close the channel members for conducting air therealong. The inverted channel members may be integral; assembled from separate sides, and a web; or folded from duct board which is longitudinally notched and which is with or without lower foot channels. The duct board may also be longitudinally notched to provide marginal side portions which extend from the runners to the air control means when the duct board is mounted on the suspended ceiling framework. As additional support and to relieve the weight on

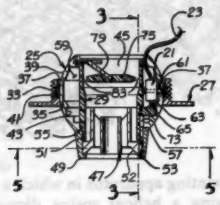
the suspended ceiling framework, anchors and clamped longitudinal members may secure the channel members and transverse members to with and between the soffit wires hanging the framework. Each array or row may have channel members of uniform side heights or may have channel members of descending side heights from a cross duct. The cross ducts may be located in staggered relationship between the troffer rows.

3,690,244

AIR VALVE WITH FAN ACTUATOR

Allen Kallel, and Arthur F. Gowing, both of Santa Ana, Calif., assignors to Wemac Company, Santa Ana, Calif.

Filed April 22, 1971, Ser. No. 136,319
Int. Cl. F24f *13/06*
U.S. Cl. 98—40 A **11 Claims**



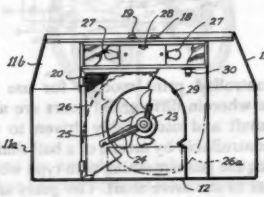
An air valve comprising a first valve member mounted for generally universal movement and having a passage therethrough, a second valve member having a passage therethrough and mounted in the passage of the first valve member for pivotal movement relative to the first valve member. Portions of the two valve members are spaced to define a substantially enclosed region within the air valve. An actuator is mounted on one of the valve members within the enclosed region and a switch is mounted on the other of the valve members within the enclosed region. Air is supplied to the passage of the second valve member by a fan which is driven by a motor. By turning of the second valve member, the switch can be opened and closed to thereby control the operation of the motor and of the fan. Air flow through the second valve member can be modulated by an appropriate valve element.

3,690,245

RANGE HOOD UNIT WITH FIRE SAFEGUARD FAN CONTROL SYSTEM

Louis Ferlise, and Ronald E. Duhamel, both of Middletown, Ohio, assignors to Panacon Corporation, Cincinnati, Ohio

Filed Sept. 17, 1970, Ser. No. 73,121
Int. Cl. F23j *11/02*
U.S. Cl. 98—115 K **6 Claims**



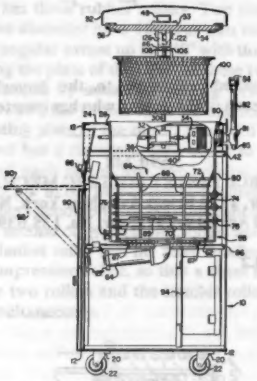
A range hood for use over a cook stove, which may be either ducted or ductless, and is provided with filters as required by its being ducted or ductless, respectively. An electric motor driven fan within the hood may be manually controlled, but additionally a safety circuit is provided to energize said fan motor automatically when cooking is being done even if said manual switch has not been actuated. Said safety circuit is also arranged automatically to shut off said fan motor, and if desired to energize a signal, in the event of a flash fire or the like. The automatic energization and de-energization of said fan motor is accomplished by means of self-resetting sensor-thermostats. The safety circuit does not interfere with fan speed control by means of said manual control.

3,690,246

APPARATUS FOR FRYING CHICKEN

Clifton W. Guthrie, Sr., Richmond, Va., assignor to Golden Skillet Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 870,835, Aug. 26, 1969, abandoned, which is a division of Ser. No. 656,500, July 27, 1967, Pat. No. 3,501,316. This application Oct. 14, 1970, Ser. No. 80,563
Int. Cl. A47j *37/12*
U.S. Cl. 99—336 **8 Claims**



An apparatus for frying chicken so as to produce the equivalent of a covered pan fried product. Chicken parts are marinated and breaded prior to cooking in a preheated apparatus. Following immersion in a cooking oil, the chicken parts are stirred, sealed and then cooked automatically according to a preselected cooking cycle. Pressure relief means insures that the pressure within a sealed cooking container is maintained either at atmospheric pressure or within one pound per square inch of atmospheric pressure. Motor driven screw means automatically lifts the chicken parts from the cooking apparatus at the conclusion of the cooking cycle.

3,690,247

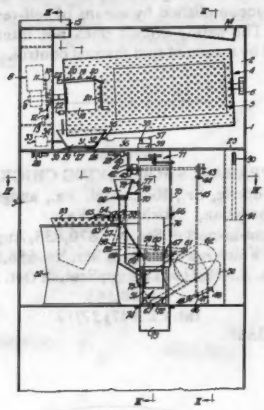
POTATO CHIP DISPENSING APPARATUS

Rene Eugene Van Cleven, and Willy Emile Van Cleven, both of Hasselt, Belgium, assignors to Koelinstallaties Van Cleven Gebroedere, personenvennootschap met beferkte aaneprakelijkheid, Hasselt, Belgium

Filed Dec. 28, 1970, Ser. No. 101,811
Claims priority, application Belgium, Oct. 29, 1970, 50563
Int. Cl. A47j *37/12*
U.S. Cl. 99—355 **5 Claims**

The invention relates to a potato chip dispensing apparatus, i.e., a fully automatic device for the preparation and packing of (French-fried) potato chips, in which, after insertion of a certain number of coins into an appropriate slot, without any

human intervention a portion or helping of potato chips is



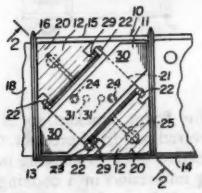
fried, packed, salted according to the buyer's wish and brought within reach of the person who has inserted the coins.

3,690,248

SANITIZABLE PASTRY FOLDING MECHANISM

Leonhard Schafer, 2770 Briggs Ave., New York, N.Y.

Filed April 19, 1971, Ser. No. 135,039
Int. Cl. A21c *3/06*
U.S. Cl. 99—450.2 **5 Claims**



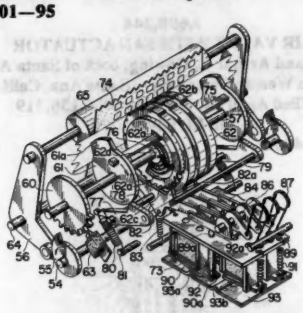
This invention relates to a spring-loaded mechanism adapted to cut and fold a pastry blanket having an edible filling thereon to produce danish pastry having a filling thereon. The mechanism consists of three parts, preferably made of stainless steel and consists of a cage having preferably more than one cell; a pastry folding mechanism having seperable spring-loaded flaps; and a lifter disposed over and partly through the folder mechanism for lifting the prepared folded-over danish pastry for removal. The cage is removably press fitted upon a slat of a conveyor chain consisting of a plurality of said slats, each having a cage thereon. The conveyor slats are not removable from the conveyor and are not a part of this invention. Each folder mechanism has a centrally disposed platform to which is fixed, preferably, two depending legs, which are disposed in frictional seizure relationship to co-acting apertures disposed in said slat to permit removal of the folder mechanism from the slat for cleaning. The lifter also is provided with a platform and two depending legs and is disposed over the folder mechanism platform and through apertures therein and thence into apertures in said slat for removal frictional seizure thereto.

3,690,249

TYPE WHEEL SETTING AND RE-SETTING MEANS IN SELECTIVE BED AND PLATEN PRINTING MACHINES

Shohachi Nihira, Tokyo; Yasuo Okawara; Takehisa Naito, both of Hoya, and Mikio Moriya, Tokorozawa, all of Japan, assignors to Citizen Watch Co., Ltd., Shinjuku-ku, Tokyo, Japan

Filed April 24, 1970, Ser. No. 31,494
Int. Cl. B41j *1/48*
U.S. Cl. 101—95 **6 Claims**



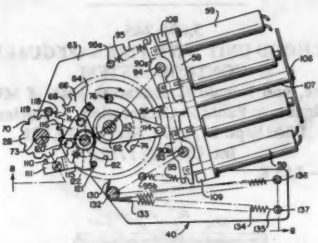
A high speed printing apparatus in which a plurality of type wheels each having a helical spring disposed therein are rotatably mounted on a shaft in side-by-side relation, with one end of the helical spring anchored to the type wheel and the other end thereof anchored to an operation bar to bias the type wheel in one direction, and the type wheels are rotated all at once by rotating the operation bar and stopped by respective associated selection members when the type faces to be printed of the respective type wheels are located in the printing position.

3,690,250

COMPACT LABEL PRINTER

David F. Bremner, Bellbrook, and Stephen B. Smith, Centerville, both of Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed July 16, 1970, Ser. No. 55,361
Int. Cl. B41j *7/48*, *1/52*
U.S. Cl. 101—95 **3 Claims**

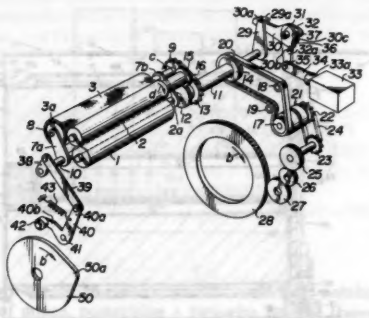


A remotely-controlled print module for use in printing labels or the like wherein differential gears are aligned on a common drive shaft and oscillatably driven to a predetermined position controllable by means of a bail shaft extending through gear slots, the gears meshing with type wheels carried on a shaft parallel to the drive shaft. The gears are loaded in one direction by means of cables and springs and, during the remotely-controlled cycle of operation, are stopped at predetermined positions by means of indexing pawls which are selectively energized through electromagnetic solenoids, the stopped position of the type wheels being compatible for striking by print hammers. The differential gears and thus the type wheels are remotely selectively controlled by computer-type commands which allow for versatility of expansion and compactness of packaging of the print module.

3,690,251
ETCHING SOLUTION APPLICATION DEVICE FOR OFFSET PRINTING MACHINES

Yoshiharu Kagari; Koichi Hirokawa, and Toru Hasegawa, all of Tokyo, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Sept. 4, 1970, Ser. No. 69,568
Claims priority, application Japan, Sept. 9, 1969, 44/71486
Int. Cl. B41f 7/32, 7/40
U.S. Cl. 101—142 3 Claims

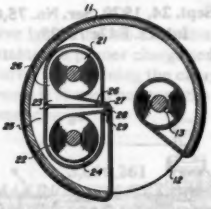


An etching solution application device for use with offset printing machines of the type wherein master plates are fed automatically to the master cylinder and comprising an etching solution applying roller mounted for rotary motion and adapted to be brought into and out of pressing contact with the master cylinder in synchronism with the automatic mounting of the master plate on the master cylinder to apply the etching solution to the surface of the master plate. The etching solution application device is rendered inoperative and locked automatically as the applying roller is released from engagement with the master plate upon completion of the etching solution application operation.

3,690,252
LITHOGRAPHIC INKING APPARATUS

David A. Sokolov, Fairport, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Nov. 20, 1969, Ser. No. 878,492
Int. Cl. B41f 25/10, 25/14; B41f 31/24
U.S. Cl. 101—147 3 Claims

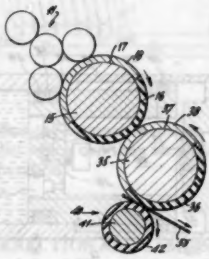


An apparatus for applying an ink and water fountain solution to a surface bearing areas of ink receptivity in image configuration and areas of water receptivity in non-image areas to provide a master for printing duplicate copies of subject matter. The ink and water fountain solution are respectively absorbed in separate diverse webs of material whereupon each of the webs may be separately stored in roll form until needed for printing. The material of the ink web and the water web is progressively unreeled into pressure contact with the master surface to apply ink to the image configuration and water to the non-image areas.

3,690,253
SHEET FEED PRESS FOR PRINTING SMALL SIZE SHEETS ON BOTH SIDES SIMULTANEOUSLY

Paul E. Dreyer, 46-10 61st St., Woodside, N.Y.

Filed June 10, 1971, Ser. No. 151,747
Int. Cl. B41f 5/02
U.S. Cl. 101—217 12 Claims

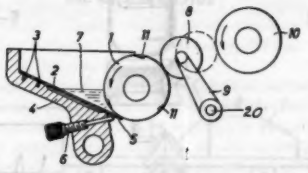


This press has three rubber rollers. Two contacting rubber rollers of same diameter have 180° cut-outs receiving printing plates of any angular extent up to 180° with the rubber of each one contacting the plate of the other as these two rollers roll in opposite directions by means of gearing. When the printing plate is a full 180°, the rubber layer on one roller always contacts the printing plate of the other. The third roller is rubber all around and has a circumference equal to half of the circumference of each of the first two rollers. A single inking system applies ink to the first of the two rollers. Thus, the first of the two rollers accomplishes a double function as plate and inkroller, the second of the first two rollers has the function of a plate and blanket roller and the third smaller roller acts as a blanket and impression roller, so that a sheet fed between the second of the two rollers and the smaller roller, is printed on both sides simultaneously.

3,690,254
INK FOUNTAIN ROLLER DEVICE FOR A PRINTING PRESS

Karl-Heinz Krochert, Offenbach am Main, Germany, assignor to Roland Offsetmaschinenfabrik Faber & Schleicher AG, Offenbach am Main, Germany

Filed April 9, 1970, Ser. No. 26,945
Claims priority, application Germany, April 15, 1969, P 19 18 987.8
Int. Cl. B41f 31/06, 31/14
U.S. Cl. 101—350 5 Claims

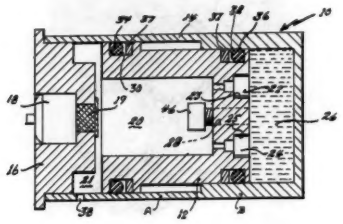


A fountain roller device for a printing press has a fountain roller with an axially elongate preferably spiral shaped groove in its peripheral wall and an ink knife coacting with the peripheral wall of the fountain roller to control the thickness of the ink layer on the same by the width of the gap between the knife and the roller. Fibers and paper particles as may be contained in the ink will accumulate in this groove and are removed therefrom as the roller rotates, assisted if desired by the sweeping action of a roller with an elastically soft surface intermittently engaging the fountain roller thereby obtaining a continuous self-cleaning of the gap.

3,690,255
LIQUID PROPELLANT CARTRIDGE

Edward J. Vass, Los Alamitos; Richard H. Braun, Downey, and Conrad R. Platt, Huntington Beach, all of Calif., assignors to The United States of America as represented by the Secretary of the Air Force

Filed Oct. 1, 1970, Ser. No. 77,160
Int. Cl. F42b 3/04
U.S. Cl. 102—39 1 Claim

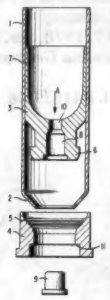


A system for controlled generation of high energy gas from a liquid propellant, based upon a differential area piston injecting liquid propellant into a combustion chamber in a regenerative cycle. One of its applications is for cartridge bomb ejection. Pressure of burning fuel fired by a primer ruptures seals in a piston wall and causes extrusion of liquid fuel from a reservoir area into the piston cavity which lies in the combustion area. Combustion of the extruded liquid carries on a regenerative process until all fuel in the reservoir has been consumed.

3,690,256
CARTRIDGE CASE

Oskar Schnitzer, Lehmusstrass 38, Furth/Bay, Germany

Filed Jan. 23, 1970, Ser. No. 5,287
Claims priority, application Germany, Feb. 1, 1969, P 19 05 103.7
Int. Cl. F42b 5/26, 7/00
U.S. Cl. 102—43 R 27 Claims

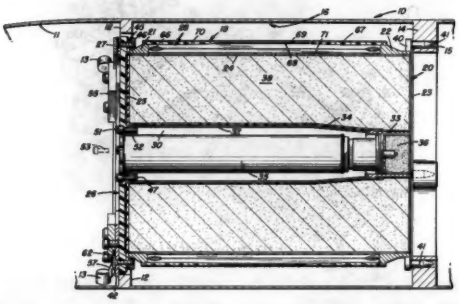


Pipe, casing, or the like having a fitting disposed at one end thereof. The fitting has an internal and an external section which are connected in a form-locking manner, and the end of the pipe, casing, or the like is held therebetween by means of a form-locking and/or frictional connection. In particular, the external section annularly surrounds the internal section and can be connected with the internal section by means of a snap connection, and at least one of the sections is made of a sufficiently elastic material. When used as a shot cartridge case, the internal section is provided with a primer cap support and an axial flash hole.

3,690,257
CONTINUOUS ROD WARHEAD

Eugene L. Nooker, Silver Spring; Luther G. Thompson, Gaithersburg, both of Md.; Glenn E. Varney, Cincinnati, Ohio, and Victor J. Dietz, Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Navy

Filed Aug. 30, 1967, Ser. No. 666,543
Int. Cl. F42b 13/18
U.S. Cl. 102—67 16 Claims



The present invention is a continuous rod warhead of more efficient design than previously devised warheads of this type. Its novel features include advanced casing and forward cover plate designs, a new weld for the rod ends, and more effective means for assuring good rod motion and continuity.

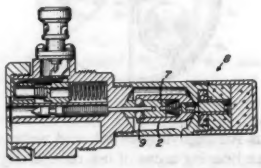
The case is designed to take the combined axial and longitudinal warhead load in flight, through the cover employed, and the forward plate functions to mount the safety and arming mechanism in place and to provide a temperature barrier to prevent excessive heating or melting of the high explosive during flight toward a target of a missile containing the warhead.

Rod motion and continuity control is effected by an improved filter and spacing arrangement and by a hinge weld of advanced design.

3,690,258
PRIMER RETAINER BUSHING

Aaron S. Berlin, Wilmington, Del.; Vincent C. Little, Fallston; Toney Leadore, Havre de Grace, both of Md., assignors to The United States of America as represented by the Secretary of the Army

Filed Sept. 24, 1970, Ser. No. 75,006
Int. Cl. F42c 19/08
U.S. Cl. 102—70 R 4 Claims

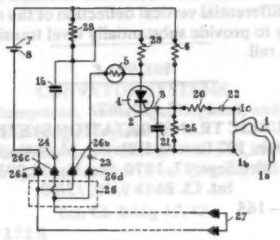


A primer mounting assembly and method of assembly for reliably and reproducibly fixedly mounting an initiator means such as a primer means or a detonator means within munitions by press fitting to avoid misfire and unsafe munitions.

3,690,259
IGNITER FOR ELECTRIC PRIMER

Henry Piazza, Toulouse, and Pierre Bach, Ferney-Voltaire, both of France, assignors to French State, represented by the Minister of Armed Forces, Ministerial Delegation for Weapons, Technical Direction of Land Weapons, Manufacturing Workshop of Toulouse, Paris, France

Filed April 3, 1969, Ser. No. 814,888
Int. Cl. F42b *23/26*
U.S. Cl. 102—70.2 **4 Claims**

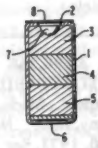


An igniter for an electric primer, applicable notably to the firing of mines, comprising a two-wire flexible trapping line disposed across the trapping area and short-circuited at one end, and a controlled semi-conductor element or "thyristor" connected in series with said electric primer and a source of electric current, said two-wire trapping line being connected to said controlled semi-conductor element so as to cause same to become conductive and thus fire the primer when the two-wire line is broken.

3,690,260
FLAME SENSITIVE IGNITOR

Josef Prior, Victoriastr. 11, Troisdorf, Germany

Filed July 3, 1969, Ser. No. 838,919
Int. Cl. F42c *19/08*
U.S. Cl. 102—86.5 **10 Claims**



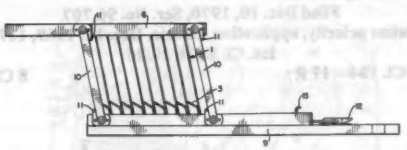
A flame-sensitive ignitor for an explosive charge, comprising a capsule containing a primer charge sensitive to flame ignition and a foil cover for retaining the charge within the capsule, wherein a recess is formed between the foil cover and the surface of the primer charge.

3,690,261
DEVICE FOR MAKING LISTS BY COPYING PORTIONS OF DOCUMENTS IN AN INTEGRATED FORM

Junichi Yokoi, 11-20, 2-chome, Wakehonmachi, Higashi-Osaka, Japan

Filed Oct. 6, 1969, Ser. No. 863,980
Claims priority, application Japan, Oct. 5, 1968, 43/72696
Int. Cl. B42f *15/00*
U.S. Cl. 40—104.04 **10 Claims**

Device comprising replaceable holders for documents of which portions have to be copied in the form of an integrated list, an actuating frame, a base plate disposed under the frame, and links connecting the frame and the base plate. The document holders are mounted in recesses in both the frame and the base plate, with suitable spaces apart. When the frame is folded down and fixed onto the base plate, the documents inserted in the holders are brought into orderly arrangement, in an overlapping manner, each exposing a definite marginal

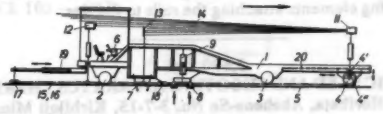


index portion. Thus the original sheets or documents can be complied into a list which can then be subjected to a conventional copying operation.

3,690,262
TRACK CORRECTION AND TAMPING MACHINE

Franz Plasser, and Josef Theurer, both of Johannesgasse 3, 1010 Vienna, Austria

Filed Nov. 19, 1969, Ser. No. 878,133
Claims priority, application Austria, Dec. 2, 1968, 11727/68
Int. Cl. E01b *27/17*
U.S. Cl. 104—7 R **20 Claims**

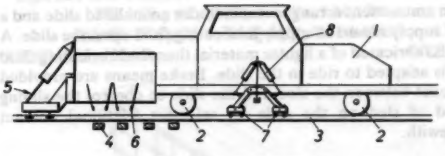


A universal tamper comprises a track leveling and lining tool mounted between the front and rear axles of an elongated machine frame. The distance of the front axle from the track correction tool and the rear axle is variable. The tamper has a reference system for the track correction.

3,690,263
TRACK LINING APPARATUS

Franz Plasser, and Josef Theurer, both of Johannesgasse 3, 1010 Vienna, Austria

Filed March 13, 1970, Ser. No. 19,340
Claims priority, application Austria, April 3, 1969, A 3333/69
Int. Cl. E01b *33/02*
U.S. Cl. 104—8 **13 Claims**



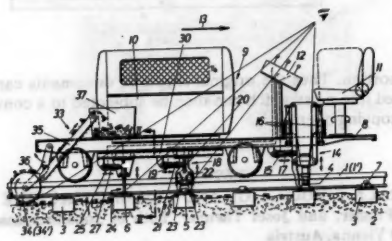
A track lining tool, which is hydraulically movable laterally to move a track engaged by the tool, comprises a flanged wheel running on the top surface of the rail head, and another rail engaging element adjacent the wheel which can be moved into and out of a position wherein it engages the side surface of the rail head.

3,690,264

MOBILE TRACK WORKING APPARATUS

Franz Plasser, and Josef Theurer, both of Johannesgasse 3, Vienna 1,, Austria

Filed Dec. 10, 1970, Ser. No. 96,707
Claims priority, application Austria, Dec. 17, 1969, 11756
Int. Cl. E01b *29/26*
U.S. Cl. 104—17 R **8 Claims**



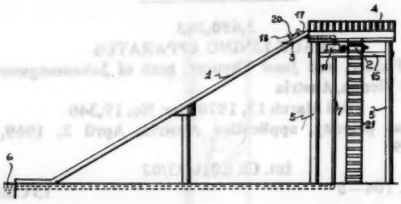
A mobile track working machine for assembling and disassembling tie plates comprises a car frame and a plurality of working tools mounted on and underneath the car frame, the tools being spaced from each other in the working direction of the machine, and each tool being associated with one of the connecting elements attaching the rails to the ties.

3,690,265

AQUATIC SLED AND SHOOTING APPARATUS THEREOF

Hiroshi Horibata, Akebono-So No. 3-7-15, Kichijoji Minami-machi, Musashino-shi, Tokyo, Japan

Filed Sept. 1, 1970, Ser. No. 68,659
Claims priority, application Japan, Sept. 3, 1969, 44/69330; Sept. 8, 1969, 44/70579; May 22, 1970, 45/43329
Int. Cl. A63g *21/18*
U.S. Cl. 104—70 **10 Claims**



An amusement arrangement includes an inclined slide and a fluid supply means to supply lubricating fluid upon the slide. A sled is fabricated of a lighter material than the lubricating fluid and is adapted to ride in the slide. Brake means are provided to coact between the sled and the slide to control the sliding speed of sled on the slide by selective frictional contact therewith.

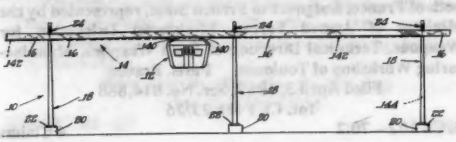
3,690,266

RAIL SUSPENSION ARRANGEMENT

Alfred M. Mayo, 14604 Las Flores, Dallas, Tex.

Filed June 2, 1970, Ser. No. 42,781
Int. Cl. E01b *25/22, 25/24*
U.S. Cl. 104—123 **7 Claims**

An overhead monorail guideway arrangement for transportation vehicles comprises a suitable number of upright columns arranged in spaced relationship along a transportation route, an overhead rail, and a suspension which resiliently mounts the rail to the columns, the resilient mounting



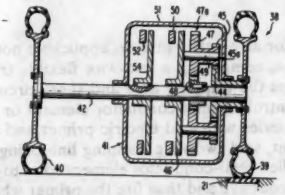
minimizing differential vertical deflection of the rail under live loading so as to provide substantially level transit to a vehicle riding on the rail.

3,690,267

PUBLIC TRANSPORTATION SYSTEM

James F. Sutton, 107 Beverly Hills Dr., Marietta, Ga.

Filed Sept. 17, 1970, Ser. No. 72,993
Int. Cl. B61b *9/00, 13/00*
U.S. Cl. 104—165 **21 Claims**



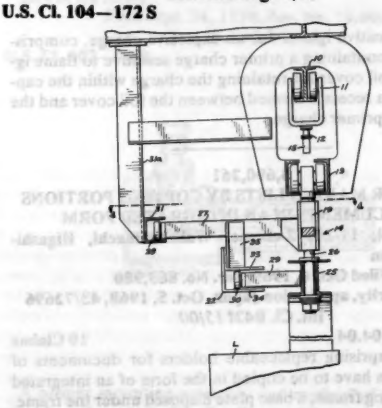
A public transportation system for use at an airport, shopping center or similar controlled area and which includes planned routes or roadways between various loading stations. Continuously driven belts extend between the loading stations along the roadways, and passenger and freight vehicles are movable with the belts. Each vehicle includes a wheel which is positioned out of alignment with the roadway wheels and engages the belt, and a variable speed transmission means is connected between the belt wheel and a roadway wheel to transmit the belt velocity through the belt wheel to the roadway wheel and propel the vehicle.

3,690,268

CONVEYOR WITH STABILIZING MEANS

Albert Goldstein, Southfield, Mich., assignor to American Chain & Cable Company, Inc., New York, N.Y.

Filed April 20, 1971, Ser. No. 135,646
Int. Cl. B65g *17/42*
U.S. Cl. 104—172 S **17 Claims**



A power and free conveyor system including a power track along which a conveyor is movable and a load track along

which carriers are movable. Each carrier comprises longitudinally spaced trolleys interconnected by a load bar pivoted thereto. A first guide bar is fixed to and extends laterally from at least one of the trolleys and a second guide bar is fixed to and extends laterally from the load bar. The first guide bar supports a second guide rail thereon which is engaged by the second guide bar. The first guide bar engages a guide rail along any portion of the track. In movement through a curved portion, the second guide bar is movable along the second guide rail to accommodate for the chordal movement of the load bar with respect to the arcuate movement of the trolleys of the carrier.

3,690,269

CONVEYOR SYSTEMS

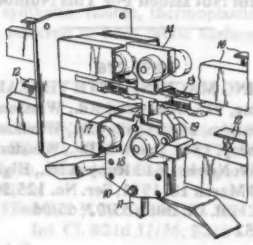
Cyril Frank Hempstead, Stevenage, England, assignor to Geo W. King, Stevenage, England

Filed May 24, 1971, Ser. No. 146,323

Claims priority, application Great Britain, May 22, 1970, 25,018/70

Int. Cl. B65g *17/42*

U.S. Cl. 104—172 S **8 Claims**



A power and free conveyor has a downwardly inclined section of its trolley track provided with a holding station at which is disposed a stop mechanism. The mechanism includes a stop arm which normally occupies an operative position in which it projects over the trolley track to depress into inoperative positions respective driving dogs and respective holdback dogs of trolleys on the track. In their operative positions, these driving dogs are engageable by pushers carried by an endless power chain running in a chain track spaced above the trolley track. The stop arm arrests a trolley by abutting the depressed holdback dog of the trolley. The mechanism also includes a second member which normally occupies an operative position in which it projects under the trolley track to restrain forward movement of a trolley at the holding station. On receipt of a signal from the next holding station along the track that the preceding trolley is clear of this next station, a pneumatic piston-and-cylinder device moves the stop arm into its inoperative position to cause a pusher to engage the driving dog of the detained trolley, and another such device allows the second member to move forwardly gradually into its inoperative position to cause a smooth forward movement of the trolley under the action of the pusher.

3,690,270

RAILWAY TRUCK BOLSTER

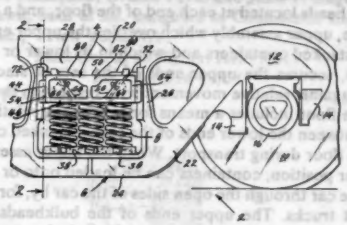
Paul F. Gutmann, Jr., and Thomas L. Mueller, both of St. Louis County, Mo., assignors to Scullin Steel Company, St. Louis, Mo.

Filed March 16, 1970, Ser. No. 19,711

Int. Cl. B61f *5/06*

U.S. Cl. 105—197 D **10 Claims**

A railway truck has a cast bolster, the ends of which are substantially hollow and project through windows in side frames. The bolster ends are snubbed by wedge-shaped friction castings which are urged upwardly by side springs and have inclined friction surfaces which bear against wear plates attached to the bolster ends. Access to the connecting devices for securing the wear plates to the bolster ends is gained through holes formed in the top walls of the bolster ends. The top walls are further embossed at the outer edges of the holes



to provide clearance around the connecting devices and are depressed at the inner ends of the holes so that a fastening tool can be inserted through the hole and advanced into engagement with each connecting device.

3,690,271

DAMPENED RAILWAY CAR TRUCK

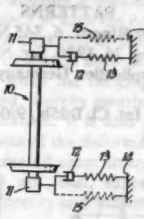
Anthony Edward Walter Hobbs, London, England, assignor to British Railways Board, London, England

Filed Sept. 15, 1969, Ser. No. 858,093

Claims priority, application Great Britain, Sept. 17, 1968, 44171/68

Int. Cl. B61f *3/12, 5/24, 5/38*

U.S. Cl. 105—199 R **7 Claims**



This invention relates to a railway vehicle suspension in which the vehicle is supported on wheelsets or double axle bogies by way of a yaw suspension which allows relative yawing movements between the vehicle and the wheelsets or bogies. This yaw suspension includes a resilient arrangement, such as a series-connected damper and spring, whose dynamic stiffness increases with increase in the yaw velocity. In this way any high frequency yawing movements, such as are caused by track irregularities, are quickly damped out.

3,690,272

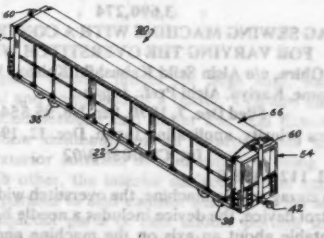
RAILROAD CAR

Paul E. Ogle, Elmwood Park; Kenneth L. Coleman, Chicago; Ross W. Wagner, Homewood, all of Ill., and Lynn J. Harter, Buford, Ga., assignors to O-T-D Corporations, by said Ogle and said Coleman

Filed May 17, 1971, Ser. No. 144,129

Int. Cl. B60p *7/10*; B65j *1/22*; B61d *45/00*

U.S. Cl. 105—366 R **46 Claims**



An improved railroad car for transporting a plurality of sets of containers, stacked one on top of the other, which are util-

ized for shipping relatively heavy materials, such as bales of synthetic rubber.

The railroad car includes a floor on which the lower ends of the sets of stacked containers rest during transport, upstanding bulkheads located at each end of the floor, and a vertically movable, upper assembly which overlies the upper ends of the sets of stacked containers and which in its lower or transport position, secures the upper ends of the sets of stacked containers against relative movement with respect to the railroad car. The floor includes a means for restraining relative movement between the lower ends of the sets of stacked containers and the floor during transport. When the upper assembly is in its upper position, containers can be loaded onto or unloaded from the car through the open sides of the car by, for example, fork lift trucks. The upper ends of the bulkheads are connected together by structural members during transport so that forces imposed on upper assembly by the containers, and particularly those occurring when the railroad car is bumped, are transmitted and distributed between both of the bulkheads. In some embodiments described herein, the upper assembly includes and carries these structural members; whereas, in other embodiments, the upper assembly carries a portion of the structural members while others of these structural members are stationary.

3,690,273

MACHINE INSTALLATION FOR FORMING ON SUCCESSIVE FIELDS OF CONTINUOUS FLEXIBLE RIBBON COMPLEMENTAL PARTS OF DECORATIVE PATTERNS

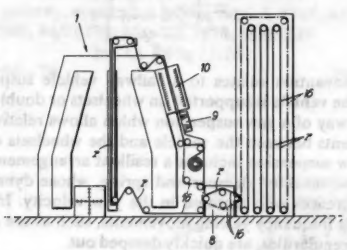
Rudolph Reich, An der Ringstr. 6, 545 Neuwied, Germany

Filed Aug. 26, 1970, Ser. No. 66,959

Claims priority, application Germany, Aug. 27, 1969, P 19 43 456.1

Int. Cl. D05b *19/00*

U.S. Cl. 112—121.11 **11 Claims**



A machine installation providing a plurality of machines arranged in series and having operating cycles for producing complemental parts, respectively, of decorative patterns on therewith registering fields of a continuous flexible longitudinal ribbon, and endless conveyor chain means releasably holding longitudinally extended ribbon at its opposite side margins and taut across its width, and operative between successive operating cycles of the machines to step successive ribbon fields into register with the respective machines.

3,690,274

ZIGZAG SEWING MACHINE WITH A CONTROL DEVICE FOR VARYING THE OVERSTITCH WIDTH

Atsuo Ohira, c/o Aisin Seiki Kabushiki Kaisha, 1, Asahi-mchi, 2 chome, Kariya, Aichi Pref., Japan

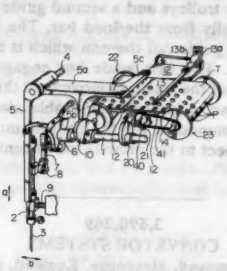
Filed Dec. 7, 1970, Ser. No. 95,554

Claims priority, application Japan, Dec. 12, 1969, 44/100489

Int. Cl. D05b *3/02*

U.S. Cl. 112—158 R **5 Claims**

In a zigzag sewing machine, the overstitch width is varied by a control device, the device includes a needle bar frame being oscillatable about an axis on the machine and reciprocably supporting a needle bar therein, a negative cam means is secured on the main drive shaft and engages said needle bar frame, a tape means running in the device has a number of series of variable number of perforations and a series of varying length follower means on said needle bar frame is engageable



said series of perforations facing the follower means so that the fall of the needle bar frame is limited in proportion to the number of perforations in said series facing the follower means.

3,690,275

Patent Not Issued For This Number

3,690,276

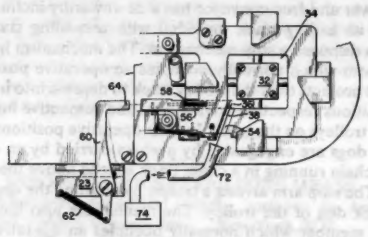
LABEL SEWING MACHINE WITH THREAD CUTTER

James Frank King, 925 Goodwood Rd., Winston-Salem, N.C.; Howard L. Beamon, 2626 Dudley St., Winston-Salem, N.C.; Willie M. Lathery, 1342 Tredwell Dr., Winston-Salem, N.C., and Kenneth W. Newlen, 613 Runyon Dr., High Point, N.C.

Filed March 18, 1971, Ser. No. 125,504

Int. Cl. D05b *65/02, 65/06*

U.S. Cl. 112—252 **10 Claims**



An improvement for a sewing machine used for barring and tacking operations which moves the work piece with respect to the sewing machine needle and produces a preselected number of stitches in programmed directions within the work piece. These machines inherently have a thread surplus extending from the thread source and through the work piece at the commencement of each sewing cycle. Specifically, this invention is a thread surplus separating apparatus which extends the thread surplus in a given manner, retains the thread surplus in this extended direction on the needle side of the work piece to avoid collection on the thread of dirt and grease from the shuttle of the machine and separates the thread surplus from the thread supply.

3,690,277

METHODS OF HEMMING AND SEAMING FABRICS

Frederick J. Baxter, East Longmeadow, and Yvonne R. Benoit, Springfield both of Mass., assignors to Johnson & Johnson

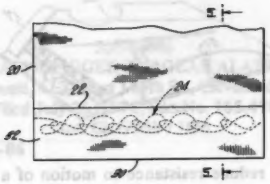
Filed April 21, 1971, Ser. No. 135,953

Int. Cl. D05b *1/24*

U.S. Cl. 112—267 **4 Claims**

A method of joining two fabric surfaces together which comprises: sewing a synthetic, fusible, thermoplastic thread to

one of the fabric surfaces to be joined, the sewing taking the form of a blind sewing stitch which passes through only a portion of the full depth of the fabric and which interloops with itself or with one or more other threads on the surface of the fabric; bringing the surface of the fabric containing the interlooped thread stitch into contact with the other fabric surface



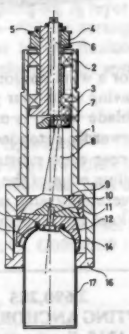
to be joined, whereby the interlooped thread stitch contacts both fabric surfaces; and applying heat and pressure to the fabric surfaces and the interposed, interlooped thread stitch, whereby the synthetic, fusible, thermoplastic thread softens and becomes adhered to both fabric surfaces, joining them together.

3,690,278

METHOD AND DEVICE FOR THE MANUFACTURE OF SEAMLESS METAL BOTTLES

Juhani Rautavalta, Helsinki, Finland, assignor to Printal Oy, Helsinki, Finland

Filed Oct. 9, 1970, Ser. No. 79,425
Int. Cl. B21d *51/26*; B21b
U.S. Cl. 113—1 G **4 Claims**



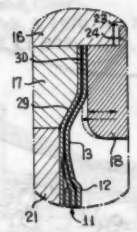
A method for the manufacture of seamless metal bottles, particularly so-called aerosol bottles, which are made from a cold-molded, cylindrical blank, open at one end. The open end of the blank is shaped by compression into a bottleneck. The open end of the blank is pressed axially against a rotation surface brought into a conic pendulum motion so that the edges of the opening of the blank are evened and thickened to some extent, and then against another rotation surface, which has also been brought into a pendulum motion so that its axis of symmetry moves like a conic pendulum, at which time the pendulous pole of the conic pendulum is on the central axis of the completed bottle, and the shape of the second rotation surface is approximately that of the completed bottleneck. Only the diameter of its plane section is somewhat greater than the diameter of the respective area of the bottleneck.

3,690,279

NECKED-IN CAN BODY AND METHOD AND APPARATUS FOR MAKING SAME

George W. Thompson, Orland Park, and John T. Hilgenbrink, Oak Lawn, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed Oct. 2, 1970, Ser. No. 77,617
Int. Cl. B21d *41/04*
U.S. Cl. 113—120 AA **3 Claims**



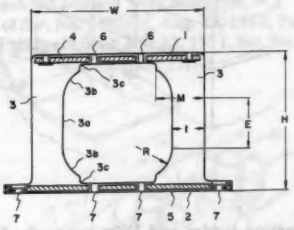
This disclosure relates to the formation of a can body having at least one necked-in end portion wherein at least the end portion of the can body is of a lapped construction with a deformable bonding material therein. It is customary to neck-in ends of can bodies utilizing a necking die with a floating center post. The clearance in such die construction takes into consideration the extra thickness of the side seam. It is now proposed to make the clearance between the die ring and the center post such that when the necking in occurs, the side seam will be compressed, thereby assuring side seam end portions of a uniform thickness. It is also proposed to effect a reduction in the thickness of the deformable bonding material which will provide increased seam strength, better creep resistance, and last, but not least, superior double seaming latitude because of uniformity and consistency of dimensions.

3,690,280

FENDER FOR LARGE SHIP

Jiro Narabu, Tokyo, Japan, assignor to Seibu Gomu Kogoku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 14, 1970, Ser. No. 71,722
Int. Cl. B63b *21/00*
U.S. Cl. 114—219 **1 Claim**



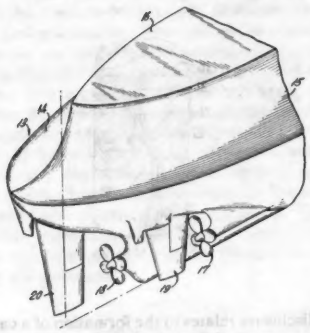
In a rectangular tubular fender for large ship, made of elastic material and composed of a buffer, a fixture and two supports provided between said buffer and said fixture, the present invention contemplates an improvement therein wherein the exterior surfaces of said supports being made parallel to each other, the interior surfaces of said supports being flat and parallel to said exterior surfaces in the middle portion, the adjacent parts of said middle portion to said buffer and said fixture being curved, and the junctions between said curved portion and said buffer or fixture being depressed with a notch.

3,690,281

STERN CONSTRUCTION FOR ICEBREAKING VESSELS

William O. Gray, Darien, Conn., assignor to Esso Research and Engineering Company

Filed Dec. 21, 1970, Ser. No. 100,171
Int. Cl. B63b *35/08*
U.S. Cl. 114—41 6 Claims



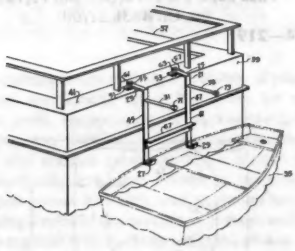
A construction for the stern of an icebreaking vessel wherein the stern is constructed and arranged to have a shape such that the vessel as it backs into its own broken channel filled with previously broken ice, effectively will shovel the ice pieces up and to the sides of the vessel, thereby clearing the channel so as to facilitate backing and simultaneously keep the ice away from the vessel's screw(s).

3,690,282

COMBINATION LADDER AND HOIST APPARATUS

Lloyd H. Busby, 4175 Jacinto Way, Long Beach, Calif.

Filed Nov. 27, 1970, Ser. No. 46,790
Int. Cl. B63b *23/04*
U.S. Cl. 114—43.5 7 Claims



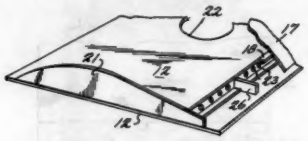
A combination ladder and hoist apparatus for stowing a dinghy from the transom of a large boat and including a ladder which is mounted on its upper extremity from the transom. The hook means is formed on the lower portion of the ladder for hooking on the rail formed by the gunwale on one side of the dinghy. Abutment means is mounted on the upper extremity of the ladder for abutting the side of the dinghy opposite the one side whereby the apparatus may be mounted from the transom and the dinghy floated adjacent thereto to hook the dinghy rail on the hook means. The side of the dinghy remote from the hook means may then be hoisted upwardly to engage the abutment means and such dinghy lashed in place.

3,690,283

METHODS OF AND APPARATUS FOR REDUCING RESISTANCE TO THE HULL OF A VESSEL

Joseph Harbit Pool, 5 The Anglers, Portsmouth Rd., Kingston upon Thames, England

Filed Oct. 7, 1970, Ser. No. 78,904
Int. Cl. B63b *1/38*
U.S. Cl. 114—67 A 8 Claims



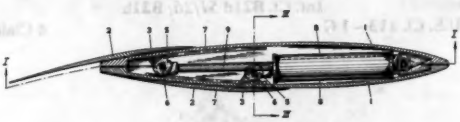
In order to reduce resistance to motion of a hull through water and/or to counteract marine growth on the hull pressurized air is discharged from a duct extending transversely of the hull into a diffuser chamber from which it is discharged through a slot in the form of a film flowing rearwardly over the submerged hull.

3,690,284

RUDDER OR KEEL FOR A WIND AND/OR POWER PROPELLED VESSEL

Ericus Gerhardus Van de Stadt, Beemster, Netherlands, assignor to Van de Stadt, E.G. Scheepwert N.V., Zaandam, Netherlands

Filed April 15, 1971, Ser. No. 134,322
Int. Cl. B63b *25/44*
U.S. Cl. 114—152 7 Claims



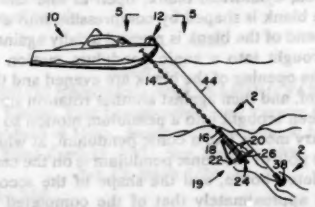
A rudder or keel for a wind and/or power propelled vessel, the keel or rudder having at its rear part mounted thereon at least one extension blade which is adapted, from the hull of the vessel, to be rearwardly extended from or retracted to a position wherein its rear edge substantially does not project rearwardly of the trailing edge of the keel or rudder. This will enhance the maneuverability and rudder movement, or increase the required keel lift by reducing leeway and/or improving the trim.

3,690,285

DRIFTING ANCHOR ALARM

Edward F. Ellison, 1212 Sandcastle Dr., Corona del Mar, Calif.

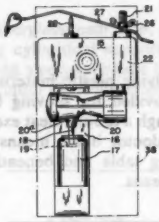
Filed April 7, 1971, Ser. No. 131,984
Int. Cl. B63b *21/24*
U.S. Cl. 114—206 R 10 Claims



A Drifting Anchor Alarm for detecting when a boat anchor is moving with respect to the general position in which it has

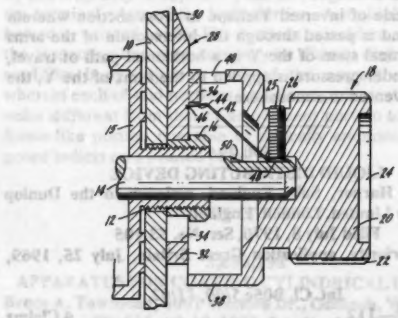
been dropped and secured comprising spring biased locking detents and an overlying collar for connecting and maintaining an auxiliary anchor to a main anchor in a separable relationship during and after they are dropped. The locking detents are unlocked by a line connected to the collar so that release of the auxiliary anchor can be effectuated by pulling the line. After the auxiliary anchor is unlocked from the main anchor subsequent main anchor drift will pay out the line which is attached to an indicator to show that the main anchor is drifting.

3,690,286
HAIR TRIGGER BURGLAR ALARM
Kenneth T. Gantt, 4132 East 144th St., Cleveland, Ohio
Filed July 26, 1971, Ser. No. 165,470
Int. Cl. G08b *13/08*
U.S. Cl. 116—86 **6 Claims**



A burglar alarm for detecting the unauthorized opening of a door or window in a building comprises a unitary, compact structure for attachment of the alarm with an actuating cable or chain connected in a manner to trigger the alarm upon very slight opening of the door or window. A horn and a can of pressurized fluid are mounted adjacent each other on a frame with a connection for the flow of pressurized fluid from the can to the horn when a normally closed valve is opened. A spring is biased in a manner to cause opening of the valve when the spring bias is released. A lever normally holds the spring in biased position with an arrangement whereby the slightest pull on the lever by the flexible connection to the door or window causes release of the spring and actuation of the horn.

3,690,287
CONTROL KNOB FOR MULTITURN ROTARY SWITCH
Leo Jedynak, and Vladas Gusaras, both of Madison, Wis., assignors to Oak Electro Netics Corp., Crystal Lake, Ill.
Filed Aug. 12, 1971, Ser. No. 171,061
Int. Cl. G09f *9/00*
U.S. Cl. 116—124 **9 Claims**

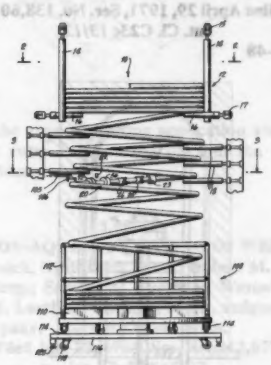


A control knob for use with a multiturn rotary switch in which means are provided for moving an indicating member radially of the switch shaft to show switch positions over several turns of the shaft.

ERRATUM

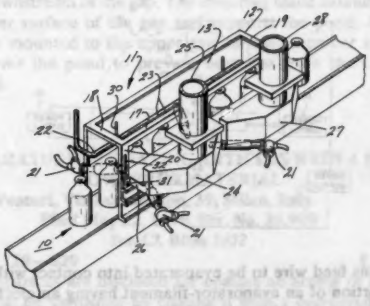
For Class 116—119 see:
Patent No. 3,690,295

3,690,288
APPARATUS FOR PROCESSING COILED TUBING HAVING TURNS PREBENT TO VARYING RADII OF CURVATURE
George Main, Garfield Heights, and Robert E. Jahnke, Fairview Park, both of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio
Filed Feb. 3, 1970, Ser. No. 8,369
Int. Cl. B05c *11/12, 5/02*
U.S. Cl. 118—6 **13 Claims**



Method and apparatus for processing coiled tubing or other material having turns prebent to varying radii of curvature without unbending the tubing. A coil of tubing is rotatably supported and the turns of tubing from the coil are sequentially separated axially of the coil. The axially separated tubing is guided into and through a processing station. The tubing is maintained on a predetermined path through the processing station by sensing deviation of the tubing from the predetermined path and then directing the tubing into the path in response to the sensed deviation. The trailing end of the tubing is sensed as it passes through the processing station, and further directing of the tubing is discontinued.

3,690,289
VAPOR TREATMENT HOOD
Charles A. Frank, 68 Summit Ave., Bridgeton, N.J.
Division of Ser. No. 756,024, Aug. 28, 1968, Pat. No. 3,623,854. This application July 22, 1971, Ser. No. 165,164
Int. Cl. C23c *13/12*
U.S. Cl. 118—48 **3 Claims**



A treatment hood designed to be used in conjunction with a conveyor on which bottles or like articles are moved in succes-

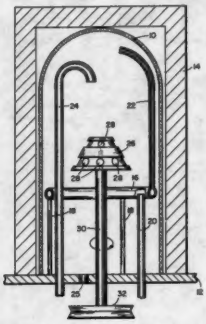
sion through the hood. Tin chloride or titanium chloride vapor is introduced into the hood at a point below the midpoint of the containers or articles to be coated and such treatment is prevented from impinging on the neck or finish of the container. A cross-air barrier is directed across the width of the hood to sweep just below the neck of the container and be directed toward an exhaust system positioned along the length of the conveyor.

3,690,290

APPARATUS FOR PROVIDING EPITAXIAL LAYERS ON A SUBSTRATE

Gary Nicholas Jarvela, and Howard Nassime Klink, both of Scottsdale, Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed April 29, 1971, Ser. No. 138,601
Int. Cl. C23c *13/12*
U.S. Cl. 118—48 **5 Claims**



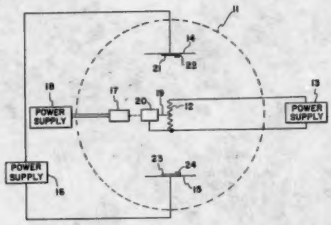
Epitaxial deposition apparatus includes a bell jar disposed within a furnace and having therein a closed annulus adapted to contain material to be vaporized when heated. First tubular means delivers gaseous reactant to the annulus and second tubular means delivers the reaction product, of the vaporized material and gaseous reactant, to a top portion of the bell jar. Means deliver a second gaseous reactant to said top portion. Means support a substrate at an intermediate portion of the bell jar.

3,690,291

DEPOSITION APPARATUS

Joseph H. Judd, Newport News, and Raymond L. Clark, Hampton, both of Va., assignors to The United States of America represented by the Administrator of the National Aeronautics and Space Administration

Filed April 28, 1971, Ser. No. 138,229
Int. Cl. C23c *13/12*
U.S. Cl. 118—49.1 **4 Claims**



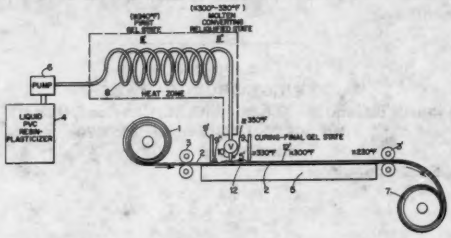
Means feed wire to be evaporated into contact with a central portion of an evaporator-filament having an electric current passing therethrough. An electrical potential difference is maintained between the wire and one side of said filament whereby the vapor is ionized.

3,690,292

APPARATUS FOR FABRICATING HIGHLY RESILIENT POLYVINYL CHLORIDE LAYERS AND THE LIKE

Robert H. Pasley, Sr., Coral Gables, Fla., assignor to Royalty Designs of Florida, Inc., Hialeah, Fla.

Filed Aug. 3, 1970, Ser. No. 60,380
Int. Cl. B05c *3/18*
U.S. Cl. 118—59 **4 Claims**



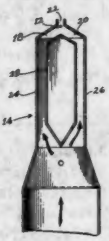
Apparatus for applying plastic material to carrier sheets. Pump means are provided for moving the plastic material from a reservoir through a tubular heat exchanger to a coating station bounded by doctor blade means. The carrier sheet passes over a coating table and beneath the doctor blade means to a wind up means.

3,690,293

APPARATUS FOR IMPROVING COATING CONNECTRICITY ON METALLIC COATED STRANDS

Marvin B. Pierson, Franklin, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio

Division of Ser. No. 806,221, March 11, 1969, Pat. No. 3,632,392. This application July 6, 1971, Ser. No. 159,869
Int. Cl. B05c *11/06*
U.S. Cl. 118—63 **8 Claims**



Fluid nozzle of inverted Y-shape in cross section wherein coated strand is passed through the intersection of the arms and the vertical stem of the Y in a horizontal path of travel, and fluid under pressure is applied to the arms of the Y, the stem being vented to atmosphere.

3,690,294

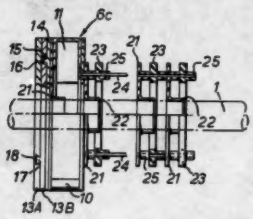
LIQUID DISTRIBUTING DEVICE

Samuel E. Harper, Sale, England, assignor to the Dunlop Company Limited, London, England

Filed July 8, 1970, Ser. No. 53,105
Claims priority, application Great Britain, July 25, 1969, 37,513/69
Int. Cl. B05c *5/00*, *11/02*
U.S. Cl. 118—112 **4 Claims**

A liquid distributing device, which is particularly suitable for the application of a viscous liquid to a rotating elongated object, consisting essentially of a rotatable annular drum provided on its external surface with scooping means to take up a

liquid from a container and in its interior with means to deposit liquid which is taken up by the scooping means and transferred to the interior on the surface of an object located in or passing through the drum when the drum is rotated. In the production of fiberglass-resin pipe, glass fiber material is laid onto a rotating cylindrical support, and the glass fiber material is coated with a polyester resin by passing the rotating support through a liquid distributing device from which the resin is deposited.

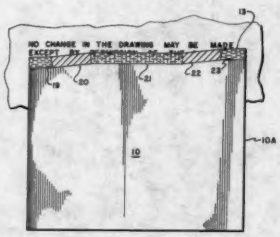


3,690,295

COMBINATION BOOK MARK AND READING GUIDE

Jim Cammack, 72 Ustick Rd., Boise, Idaho

Filed Jan. 11, 1971, Ser. No. 105,289
Int. Cl. B42d 9/00
U.S. Cl. 116—119 **3 Claims**



A combination book mark and reading guide comprising a card-like body portion having an irregular reading line formed by a multiplicity of adjacent plain line segments along one of the terminal edges of the body portion. A multiplicity of embossed or printed border-like portions coincident with each of the respective line segments may be distally disposed on the card-like body adjacent each of the respective segments wherein each of said portions include an ornamental design or color different from that of an adjacent portion to produce a frame-like portion operable to optically emphasize fully exposed indicia on a printed page.

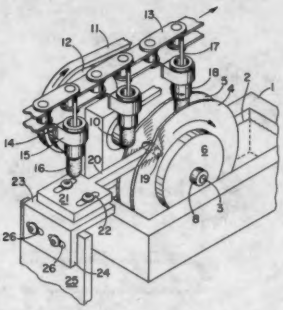
3,690,296

APPARATUS FOR COATING CYLINDRICAL OBJECTS

Bruce A. Townsend, 4061 Western Dr., Oshkosh, Wis.

Filed March 10, 1971, Ser. No. 122,774
Int. Cl. B05c 1/02
U.S. Cl. 118—227 **5 Claims**

A device for applying coating to a succession of traveling cylindrical objects includes a pair of discs on the outer peripheral portion of which the coating is carried to the objects. A spreader projects between the discs contacting them inwardly of the zone of coating application and spreads the discs so that entry between the discs of the objects to be coated is facilitated.

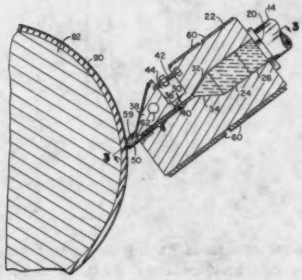


3,690,297

NON-AQUEOUS COATING OF WEBS

Milton P. Deatch, Northboro, Mass.; Robert M. Jodrey, Lake Oswego, Oreg.; Samuel L. Guastella, Westminster, Mass., and Jerry J. Larrivee, Gorham, Mass., assignors to Blandin Paper Company, Grand Rapids, Mich.

Filed July 22, 1969, Ser. No. 843,677
Int. Cl. B05c 5/02
U.S. Cl. 118—410 **16 Claims**



Apparatus for supplying molten coating through a narrow extruding gap in a distributor head to a pond confined between a supported web and a metering blade carried by the head downstream of the gap. The metering blade extends from the lower surface of the gap and supports the pond. A heat shield is mounted to the upper gap defining member and extends over the pond to prevent heat loss from the coating material.

3,690,298

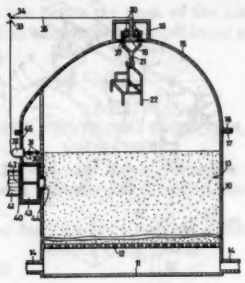
APPARATUS FOR COATING ARTICLES WITH A DRY POWDERED MATERIAL

Enrico Venturi, Via Lorenteggio, 39, Milan, Italy

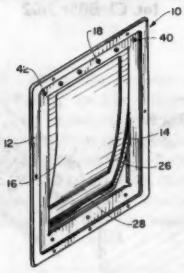
Filed May 22, 1970, Ser. No. 39,909
Int. Cl. B05c 5/02
U.S. Cl. 118—629 **1 Claim**

An apparatus are disclosed for coating an article of manufacture to be varnished by coating it with a powdered resin and then heat-cured. A localized powder-cloud is formed internally of a tunnel, the tunnel overlying a tub in which the powdered resin is contained. Means are provided for forming

a fluidized bed with the powder particles and means are also provided to provide a temporary adhesion of the powder to the articles (e.g. a glue or a system of electrostatic charges) prior to the final anchoring obtained by curing.



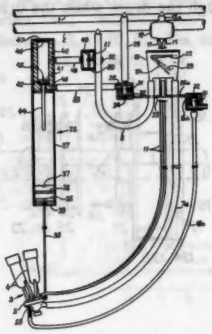
3,690,299
PET DOOR APPARATUS
Frances H. Johnson, P.O. Box 643, Northridge, Calif.
Filed March 29, 1971, Ser. No. 129,063
Int. Cl. A01k *1/02*
U.S. Cl. 119—1 **7 Claims**



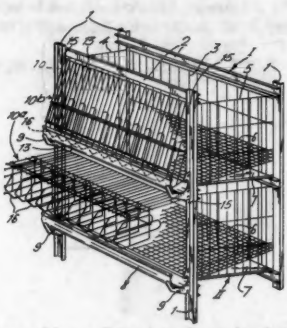
A pet door apparatus having an open frame to which is swingably secured a door, the door being capable of swinging loose in either direction with respect to the frame, a substantially U-shaped border element attached to the frame adjacent the end of each leg of the border element, the border element to swing only in one direction along with the door and remain in contact with the frame during the swinging movement of the door in the opposite direction, a slot located within each leg in the area of the attachment to permit the border element to become disconnected from the frame upon application of sufficient force.

3,690,300
APPARATUS FOR REMOVING TEAT CUPS
Guido Antonio Tonelli, Sodertalje, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden
Filed Nov. 12, 1970, Ser. No. 88,877
Claims priority, application Sweden, Nov. 17, 1969, 15727/69
Int. Cl. A01j *05/04*
U.S. Cl. 119—14.08 **3 Claims**

A milk flow indicator is inserted in the milk pipeline between the milk claw and a collection place for the milk; and upon cessation of the milk flow, the indicator actuates a means for reducing the vacuum in the milk claw and also admitting atmospheric air into the claw, prior to removal of the teat cup cluster. After the vacuum reduction, the indicator preferably actuates means for pulling the teat cups from the teats so that such pulling effects an appreciable admission of air into the teat cup liners.



3,690,301
CAGES FOR REARING ANIMALS
Frans Bruggeman, Kortrijk, and Fernand Schmidt, De Pinte, both of Belgium, assignors to N.V. Bekaert S.A., Zwenegem, Belgium
Filed May 28, 1970, Ser. No. 41,519
Claims priority, application France, June 2, 1969, 6917984
Int. Cl. A01k *05/00*
U.S. Cl. 119—18 **5 Claims**

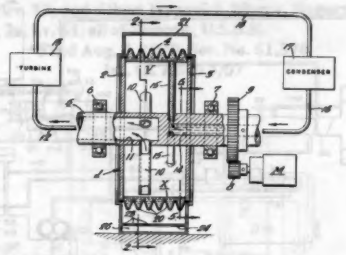


Cages or batteries for the rearing of a plurality of animals. The cage comprises a feed trough extending along one side of the cage in which a movable panel is disposed which constitutes an access door to the cage. The movable panel carries separating members which are removable engageable with the feed trough. The arrangement is such that with the separating members engaged with the feed trough, animals within the cage are enabled to feed from the feed trough with said members separating at least the heads of adjacent animals.

3,690,302
ROTARY BOILERS
Philip J. Rennolds, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed March 25, 1971, Ser. No. 128,076
Int. Cl. F22b *5/00*
U.S. Cl. 122—11 **6 Claims**

A rotary boiler comprising a boiler chamber defined by axially spaced side walls and radially spaced outer peripheral wall. The boiler is rotated about its axis at a speed to maintain

an annular body of organic liquid distributed circumferentially about the inner surface of the peripheral boiler wall with a cylindrical liquid/vapor interface disposed at a predetermined radius from the rotation axis. Combustion means is provided outwardly adjacent the boiler peripheral wall to heat and vaporize the liquid at high boiling heat fluxes greater than obtainable at ambient gravity. The boiler peripheral wall is configurated, as by flutes or corrugations, in the circumferential



direction to provide transversely thereof in the axial direction a total length of wall heat conduction surface to the liquid that is substantially greater than the linear axial spacing of the boiler side walls at the liquid/vapor interface. The greater heat conduction surface of the peripheral wall reduces the heat flux at the wall and the temperature difference between the wall and the liquid/vapor interface to an extent that a compact boiler can be operated at high overall thermal flux with minimal decomposition of the boiler fluid.

3,690,303

FORCED CIRCULATING STEAM GENERATOR AND METHOD OF GENERATING STEAM

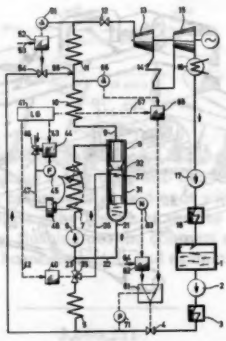
Richard Dolezal, Winterthur, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland

Filed Dec. 21, 1970, Ser. No. 99,845

Claims priority, application Switzerland, Dec. 24, 1969, 19211/69

Int. Cl. F22b *29/06*

U.S. Cl. 122—406 S **5 Claims**



The steam generator is operable at supercritical pressure at the upper end of the load range and is operable under sliding pressure control. At a pressure near critical, the working medium entering the evaporator is heated by heat obtained from the steam generated in the evaporator. This is accomplished by spraying a portion of the working medium into the separator to mix with all the working medium passing from the evaporator before passing to the evaporator or by spraying all the fresh working medium into a portion of the working medium passing from the evaporator prior to passage to the evaporator.

ERRATUM

For Class 123—32 G see:
Patent No. 3,690,768

3,690,304

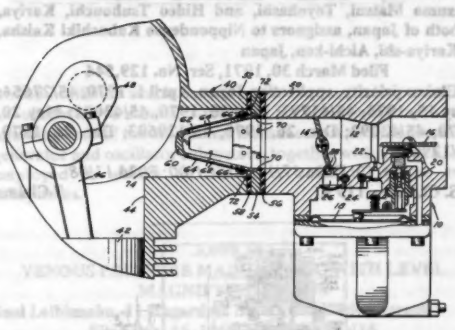
CARBURETOR CONSTRUCTION TO ELIMINATE FUEL ACCUMULATION AT THE REED VALVE

Kenneth C. Schneider, and Charles H. Tuckey, both of Cass City, Mich., assignors to Walbro Corporation, Cass City, Mich.

Filed Jan. 16, 1970, Ser. No. 3,437

Int. Cl. F02b *33/04*

U.S. Cl. 123—73 V **1 Claim**



A uni-directional valve arrangement for two-cycle internal combustion engines which eliminates undesirable collection of pockets of fuel in the carburetor system and the resultant undesirable running characteristics, this being accomplished by venting from the mixing chamber of the carburetor system directly to the areas surrounding the unidirectional or "reed" valves so that an air fuel mixture moves through the restricted and dead pocket areas to keep them clean of fuel collections, thus preventing overrich comedown when a throttle is closed and preventing flooding under other running conditions.

3,690,305

FUEL SUPPLY CONTROL SYSTEM FOR AUTOMOBILE ENGINES

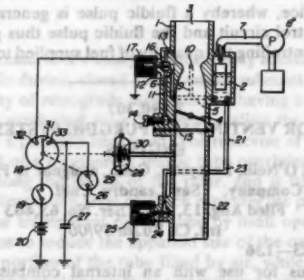
Hiroshi Shimada, Hiroshima-ken; Mitsuru Nagai, Hiroshima-shi; Mitsuo Ohfuji, Katsuta-shi, and Toshiyuki Sasaki, Hitachi-shi, all of Japan, assignors to Hitachi, Ltd., Tokyo and Toyo Kogyo Company Limited, Aki-gun, Hiroshimaken, Japan

Filed Oct. 2, 1969, Ser. No. 863,175

Claims priority, application Japan, Oct. 4, 1968, 43/71806

Int. Cl. F02d *31/00, 11/10*

U.S. Cl. 123—97 B **13 Claims**



A fuel supply control system for automobile engines having a fuel cutoff means provided in the carburetor to prevent a

great deal of harmful exhaust gas from being discharged during the braking with the motor, and in which use is made of an auxiliary fuel supply system for correcting any delay in the recovery of fuel, in addition to the ordinary main and idle fuel supply systems provided to the carburetor, so as to ensure the automobile to shift from its coasting operation to its accelerating operation, whereby fuel may be supplied from the auxiliary fuel supply system for a predetermined time to shift the automobile from coating to fast running and thus the engine can rotate smoothly in quick response to variations in the running condition of the vehicle.

3,690,306

FLUIDIC CONTROL SYSTEM OF FUEL INJECTION DEVICE FOR INTERNAL COMBUSTION ENGINES

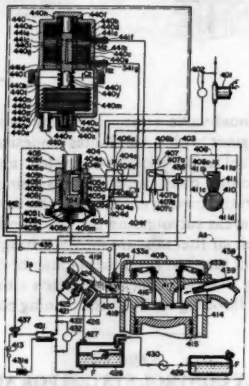
Kazuma Matsui, Toyohashi, and Hideo Tsubouchi, Kariya, both of Japan, assignors to Nippondenso Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed March 30, 1971, Ser. No. 129,544

Claims priority, application Japan, April 1, 1970, 45/27654; May 15, 1970, 45/41793; May 20, 1970, 45/43091; May 20, 1970, 45/43092; Dec. 26, 1970, 45/129603; Dec. 26, 1970, 45/129604

Int. Cl. F02n *37/14*; F15c *1/00*; F02d *11/08*

U.S. Cl. 123—119 R **7 Claims**



A control system for a fuel injection device of internal combustion engine, which comprises trigger pulse generator for generating a trigger pulse in synchronism with the rotation of an internal combustion engine, a variable circuit-length device by which the length of a fluid passage can be varied according to the load on the engine and a fluidic control circuit for generating a fluidic pulse of a variable width in cooperation with said variable circuit-length device, and in which the trigger pulse generated by said trigger pulse generator is applied to the fluidic control circuit and said variable circuit-length device, whereby a fluidic pulse is generated by said fluidic control circuit and the fluidic pulse thus generated is used for controlling the quantity of fuel supplied to the engine.

3,690,307

VAPOR VENTING AND PURGING SYSTEM FOR ENGINES

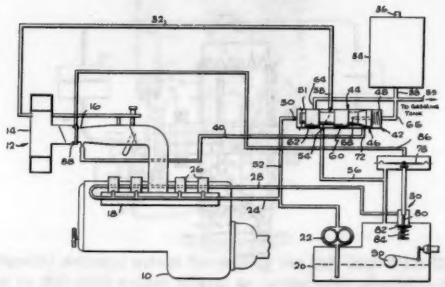
Cormac G. O'Neill, Lafayette, Calif., assignor to Physics International Company, San Leandro, Calif.

Filed Aug. 13, 1970, Ser. No. 63,463

Int. Cl. F02m *59/00*

U.S. Cl. 123—136 **2 Claims**

Apparatus for use with an internal combustion engine wherein a fuel float bowl and gasoline tank are connected through a vapor trap to the ambient atmosphere to prevent pollution by hydrocarbon vapors. The vapor trap is purged at high engine loads by an air flow through the vapor trap and into the engine, the air flow being controlled by the use of a sensor stationed along the path of the fuel or air components prior to their entering the cylinders. In a fuel injection engine of the type wherein fuel pressure varies with engine load, the vapor trap is coupled to a venturi through a valve that is



opened only when the fuel pressure exceeds a predetermined value. The valve has a variable opening so that only small amounts of purge air flow through the vapor trap to the engine at moderate engine loads and large amounts of purge air flow only at very high engine loads, to provide a minimal change in the fuel-to-air ratio.

3,690,308

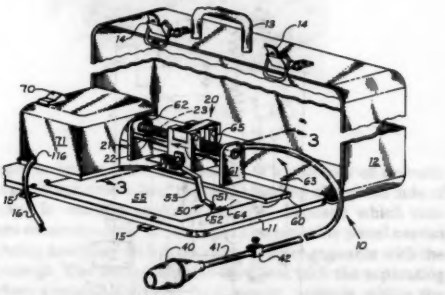
HAND ERGOGRAPH WITH MARKING STYLUS

Thaddeus E. Daniels, 38 W. 56th St., Indianapolis, Ind.

Filed Sept. 16, 1970, Ser. No. 72,652

Int. Cl. A61b *5/10*

U.S. Cl. 128—2 N **8 Claims**

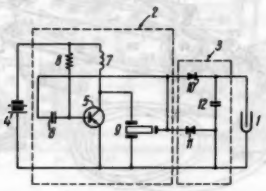


A device for measuring muscle fatigue. A squeezable air bulb is connected via an air hose to a carriage having an air piston operatively connected to a marking stylus. The stylus marks across the width of a tracing paper proportional to the pressure exerted on the air bulb. A threaded rod is rotatably mounted through the carriage and is driven and coupled to an electric motor. Rotation of the threaded rod causes the carriage and marking stylus to move the length of the tracing paper. A bell is automatically rung once every revolution of the threaded rod. The ergograph is packaged in a carrying case.

3,690,309
RADIOCAPSULE FOR REGISTERING IONIZING RADIATION IN THE CAVITIES OF HUMAN BODIES

Viktor Mikhailovich Pluzhnikov, Studenchesy gorodok MIFI, Korpus 6, kv. 32; Karl Davidovich Kalantarov, ulitsa Serafimovicha, 2, kv. 469; Jury Yakovlevich Gugnin, Timiryazevskaya ulitsa, 10/12, kv. 108; Valentin Sergeevich Semenov, ulitsa Garibaldi, 23/56, Korpus 1, kv. 79; Valentina Vasilievna Zelenina, Studenchesky gorodok MIFI, Korpus 9, kv. 15, and Albert Ivanovich Filatov, Nagornaya ulitsa, 64, 2a, kv. 61, all of Moscow, U.S.S.R.

Filed Aug. 5, 1970, Ser. No. 61,370
Int. Cl. A61b 5/07
U.S. Cl. 128—2 A 1 Claim

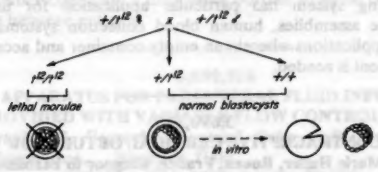


A radiocapsule for registration of ionizing radiation in the cavities of human body, comprising a detector to register ionizing particles in the cavities of human body and to modulate r.f. signals of an inverter of a d.c. voltage into an a.c. sine voltage at the moment when ionizing particles are being registered, said inverter having a piezo-electric transformer.

3,690,310
METHOD OF BIOASSAY OF FERTILITY AND CONTRACEPTIVE DRUGS

Beatrice Mintz, Huntingdon Valley, Pa., assignor to The Institute for Cancer Research, Philadelphia, Pa.

Filed March 15, 1971, Ser. No. 124,307
Int. Cl. A61b 10/00
U.S. Cl. 128—2 R 3 Claims



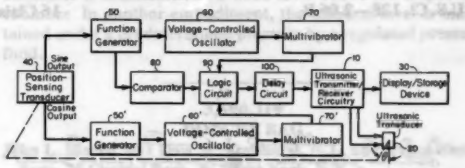
A method of bioassay including the mating of female and male mice, introducing a test drug into the females within a time which begins before mating and ends within a few days after mating, sacrificing the female at various times within a few days of mating, flushing out the contents of the oviducts and of the uterine horns separately and examining the flushed out contents.

3,690,311
ULTRASONIC SCANNING APPARATUS WITH TRANSDUCER SCANNING RATE-RESPONSIVE TRANSMITTER

Stanley W. Schorum, Park Ridge, and Wonjin Song, Arlington Heights, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

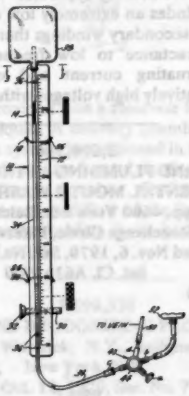
Filed May 27, 1971, Ser. No. 147,579
Int. Cl. A61b 5/00
U.S. Cl. 128—2 V 4 Claims

An ultrasonic medical diagnostic apparatus for scanning an object at a predetermined rate and generating a two-dimensional anatomical map of a plane section thereof. A position-sensing transducer develops an electrical signal corresponding to the orientation of an ultrasonic transducer. A function generator is responsive to the electrical signal for generating a voltage proportional to the rate of change of position of the ultrasonic transducer. This voltage is applied to a voltage-controlled oscillator which in turn varies the transmission rate of an ultrasonic transmitter-receiver in accordance with the scanning rate of the ultrasonic transducer. A second function generator and oscillator subsystem, together with a switch, are employed to switch to the more accurate of the two subsystems.



3,690,312
VENOUS PRESSURE MANOMETRIC WITH LEVEL MAGNIFYING MEANS

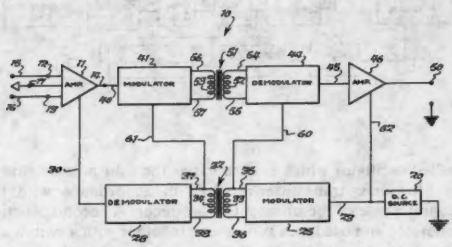
Saul Leibinsohn, 11 Hagardom St., Rishon Lezion, Israel

Filed Dec. 16, 1969, Ser. No. 885,416
Int. Cl. A61b 5/02
U.S. Cl. 128—205 D 8 Claims

Venous pressures are easily and accurately measurable with a manometric device, closed at one end to substantially lessen the possibility of retrograde infection and having a sight glass affixed to a graduated ruler backing to align the zero level thereof with a patient's zero level. The reservoir of the device is comprised of a transparent plastic tube overlying a pattern imprinted along the length of the ruler, and is filled with a transparent liquid, the level of which provides the pressure indication. The transparent plastic tube by itself operates as a divergent lens to reduce the apparent size of the overlaid pattern in that portion of the tube filled by air, while the transparent tube and liquid operate as a convergent lens to increase the apparent size of the pattern beneath the liquid filled portion of the tube, thereby emphasizing the level to which the fluid surface extends.

3,690,313
ELECTRICALLY ISOLATED SIGNAL PATH MEANS FOR A PHYSIOLOGICAL MONITOR

Benjamin H. Weppner, Snyder; Leo P. Lefebvre, Tonawanda, and Victor R. Miller, Clarence, all of N.Y., assignors to Mennen-Greatbatch Electronics, Inc., Clarence, N.Y.

Filed Oct. 9, 1970, Ser. No. 79,516
Int. Cl. A61b 5/04
U.S. Cl. 128—2.06 B 16 Claims

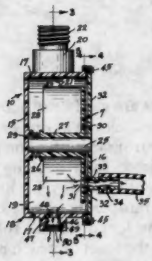


A circuit for providing electrical isolation between a patient and physiological monitoring apparatus comprising an amplifier, having applied to the input thereof a physiological signal from the patient, and a first circuit branch including an isolation transformer connected between a modulator and a demodulator for connecting a d.c. voltage source of relatively low magnitude to the amplifier. Connected to the amplifier output is a second circuit branch comprising an isolation transformer connected between a modulator and a demodulator, and the output of the demodulator is coupled to the input of physiological monitoring apparatus. Each of the isolation transformers includes an extremely low capacitance between the primary and secondary windings thereof to present an extremely high reactance to low frequency, including line frequency, alternating current and each is capable of withstanding relatively high voltages without breakdown.

3,690,314
FAUCET AND PLUMBING ATTACHMENT FOR INTERDENTAL MOUTH WASH DISPENSER

Garrison G. Trupp, 4600 York Rd., Baltimore, Md., and Marc A. Trupp, 23 Stonehenge Circle, Pikesville, Md.

Filed Nov. 6, 1970, Ser. No. 87,556
Int. Cl. A61h 9/00
U.S. Cl. 128—66 6 Claims

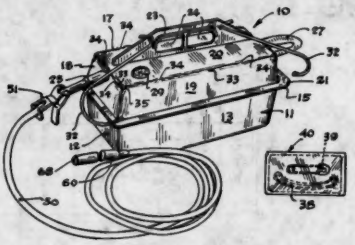


An attachment for a faucet whereby water will be caused to pulsate as it is discharged or dispensed through an interdental point so that the pulsating water under pressure can be conveniently directed on to a person's teeth, gums, and the like.

3,690,315
COMBINED CONTAINER AND PACKAGE PARTICULARLY ADAPTED FOR URINARY DRAINAGE ASSEMBLIES

Richard Marion Chittenden, Grayslake; Aldean William Whitton, Northbrook; Fidel Villaluna Macalalad, Lake Forest; Richard Massman, Winnetka, and Earl David Wilson, Ingleside, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Aug. 26, 1970, Ser. No. 66,951
Int. Cl. A61f 5/44; B65d 1/02
U.S. Cl. 128—275 9 Claims



A combined container and package formed of a substantially rigid bottom portion of the general configuration of a tray and a foldable top portion having substantially the same configuration as the rigid portion and having fold lines coincidental with the end walls, side walls and top to enable the foldable portion to collapse under the action of a compressive force. The two portions are sealed together at the periphery of the openings thereof to so define a container, the foldable portion being collapsible within the rigid portion. With the foldable portion collapsed within the rigid portion other parts or portions ultimately to be attached to the container can be stored in the folds of the folded top half and a cover can be sealed around the edge of the opening. In this fashion a self-contained package is produced and upon use the cover can be opened, the stored parts removed and the foldable portion withdrawn to form the container. Such a container and packaging system has particular application for urinary drainage assemblies, human blood collection systems, and other applications wherein an empty container and accessory equipment is needed.

3,690,316
CONTRACEPTIVE CERVICAL OBTURATOR

Renee-Marie Haller, Rouen, France, assignor to Etablissement Prairial, Vaduz, Liechtenstein

Filed Aug. 14, 1970, Ser. No. 63,866
Claims priority, application Switzerland, Sept. 2, 1969, 13263/69
Int. Cl. A61f 5/46, 15/00
U.S. Cl. 128—130 2 Claims

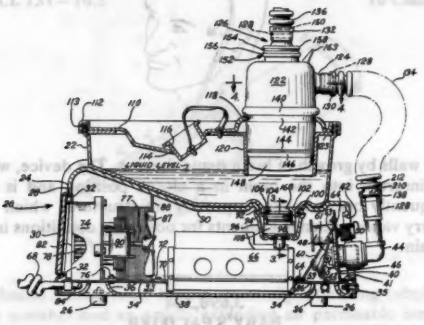
A cervical obturator for contraceptive use, containing an active substance, constituted by a fusiform shaped pastille terminating at one of its ends in an enlarged base, exercising an effect of obturation and having appropriate dimensions. The active substance is acetylsalicylic acid in powder.

3,690,317

SONIC NEBULIZER

William V. Millman, Davenport, Iowa, assignor to The Bendix Corporation

Filed Oct. 29, 1970, Ser. No. 85,069
Int. Cl. A61h *1/00*; A61m *15/00*
U.S. Cl. 128—194 7 Claims



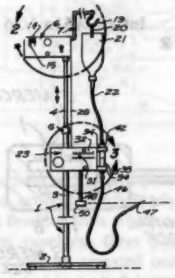
A sonic nebulizer having an electronic powered piezo-electric crystal to produce mechanical vibrations which are transmitted through a coupling fluid and focused on a second fluid contained in a chamber having a tangentially directed pressurized air inlet and a central opening whereby the nebulized second fluid is entrained by the vortex air flow generated in the chamber and the resulting fluid mixture carried through the outlet. The coupling fluid, electric power oscillator, piezoelectric crystal and associated control apparatus are contained by a portable casing which presents a compact, lightweight and rugged unit particularly adapted for short or long term use in supplying medicated air or oxygen to a patient undergoing medical care. The chamber containing the nebulized second fluid is made of an inexpensive, transparent material which is quickly and easily mounted to the casing and attached to inlet and outlet hoses. The inlet and outlet hoses, like the chamber, may be made from inexpensive material and together with the chamber constitute a disposable portion to avoid contamination between patients.

3,690,318

APPARATUS FOR PARENTERAL FLUID INFUSION PROVIDED WITH VARIABLE FLOW CONTROL MEANS

Reynolds G. Gorsuch, Thousand Oaks, Calif., assignor to Bourns, Inc., Riverside, Calif.

Filed April 16, 1970, Ser. No. 28,995
Int. Cl. A61m *05/14*
U.S. Cl. 128—214 E 10 Claims



An apparatus, intended to be mounted adjacent a patient, which supports an inspection chamber at a predetermined elevation with respect to the patient, the chamber being connected to the patient through an infusion supply tube. A container of intravenous infusion fluid supplies the fluid to the inspection chamber at a predetermined pressure, and at a selected rate, depending on the selection of one of several exit orifices and calculated to maintain the fluid at a predetermined level in the inspection chamber. Fluid level sensors give warning if the fluid level in the inspection tube rises or falls a preselected amount. In one embodiment, the fluid level in the container is maintained at a fixed level above the inspection chamber. In another embodiment, the infusion level is maintained under a predetermined pressure by a regulated pressure fluid.

3,690,319

DOUCHE BAG

John L. Marco, 601 Dow St., Oakhurst, N.J., and Irving Henry Saxe, 75 Central Park, W., New York, N.Y.

Filed July 6, 1970, Ser. No. 52,169
Int. Cl. A61m *7/02*
U.S. Cl. 128—251 7 Claims

A douche bag provided with a reservoir for retaining a measured amount of liquid. A delivery chamber is connected to the reservoir and a syringe is positioned in the chamber which acts as a valve to direct the flow of the liquid from the reservoir into the delivery chamber. Outlets in the delivery chamber permit the outward flow of the liquid. The syringe is provided with means enabling it to be inserted into, and distend the vaginal cavity.

3,690,320

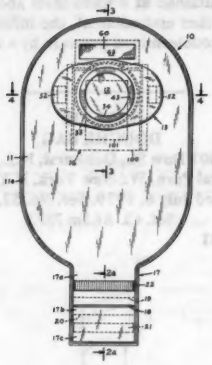
OSTOMY BAG AND DEODORIZING PACKET THEREFOR

Phyllis E. Riely, Warwick, N.Y., assignor to International Paper Company, New York, N.Y.

Filed Oct. 12, 1970, Ser. No. 79,826
Int. Cl. A61f *5/44*
U.S. Cl. 128—283 24 Claims

The ostomy bag comprises a receptacle pouch containing an inlet aperture and means for providing communication between the pouch interior and the ostomy orifice on the surface of the wearer's body. This means comprises (a) a thin, flexible, essentially planar member containing a conduit which provides communication between the pouch inlet aperture and the ostomy orifice; (b) an upwardly projecting rim surrounding the conduit, over which the pouch inlet aperture is fitted; (c) a continuous groove in one surface of the planar member which surrounds the rim and in which the receptacle pouch is mounted, and (d) a recess in the surface of the planar member opposed to the grooved surface, this recess surrounding the conduit and adapted to receive a gasket or suitable means for sealing the ostomy bag to the body. The planar member is provided with means for affixing it to the body by use of a belt.

The ostomy bag contains a gas permeable section in the pouch wall to permit release of intestinal gas from the interior to the exterior of the pouch. The pouch also contains a deodorizing packet affixed to the inner pouch wall. This packet comprises an inner sealed envelope containing a volatile deodorizing composition and an outer sealed envelope



which contains the inner sealed envelope. The inner envelope is ruptured to discharge its contents into the inner space between the two envelopes. The outer envelope has microbial barrier properties and is permeable to the vapors emanating from the deodorizing composition. These deodorizing vapors pass through the outer envelope and into the environment surrounding the outer envelope.

3,690,321

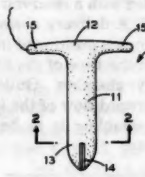
CATAMENIAL DEVICE

Shalom Z. Hirschman, 110-11 Queens Blvd., Forest Hills, N.Y.

Filed Oct. 15, 1970, Ser. No. 81,057

Int. Cl. A61f *13/20*

U.S. Cl. 128—285 **7 Claims**



A catamenial device including a tampon portion for insertion into the vaginal canal, and a pad portion integral with the tampon portion and extending transversely thereof, the pad portion being seated between the labia majora of the vulva.

3,690,322

Patent Not Issued For This Number

3,690,323

DEVICE FOR DRAINING VENTRICULAR FLUID IN CASES OF HYDROCEPHALUS

Donald E. Wortman, Rockville, Md., and Lawrence J. Mervis, Milwaukee, Wis., assignors to The United States of America as represented by the Secretary of the Army

Filed Dec. 1, 1970, Ser. No. 94,069

Int. Cl. A61m *27/00*

U.S. Cl. 128—350 R **10 Claims**

A modified ventricular end for a ventriculo-cardiac shunt used in the treatment of hydrocephalus and similar conditions is provided for removing fluids which accumulate in the cavity of the brain and must be drained to the heart. An umbrella-shaped cover protects an apertured end of the shunt for preventing the same from becoming attachad to the ventricular walls by growth of brain tissue thereon. The device, which is inserted into the brain in a closed position and is subsequently opened, has supporting rib structures which may carry various sensing elements for observing conditions in the brain.

3,690,324

BABY'S PACIFIER

Mayer D. Spivack, 53 Spruce St., Watertown, Mass.

Filed Jan. 26, 1970, Ser. No. 5,680

Int. Cl. A61j *17/00*; A63h *5/00*

U.S. Cl. 128—359 **5 Claims**

A baby's pacifier exercise or teething device including a tube of resilient flexible material. The tube may be formed in a ring having one or more intertwined loops. The tube also may be filled with a material, such as bunched or crumpled sheet plastic, which generates an audible crinkling sound as the tube is deformed.

3,690,325

IMPLANTABLE ELECTRIC DEVICE

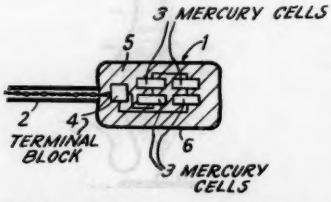
John Kenny, Welwyn Garden City, England, assignor to Devices Limited, Welwyn Garden City, England

Filed Nov. 2, 1970, Ser. No. 86,165

Claims priority, application Great Britain, Nov. 3, 1969, 53,889/69

Int. Cl. A61n *1/36*

U.S. Cl. 128—419 R **9 Claims**



An implantable electric device which has at least one electric cell, a casing of epoxy resin encapsulating the electric cell, and a thin barrier layer of metal covering the casing, which layer is permeable to gas and relatively impermeable to liquid.

3,690,326

CIGARETTE FILTER

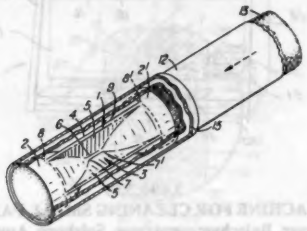
Francis Robert Davenport, Ashtead, England, assignor to American Filtrona Corporation, Richmond, Va.

Filed Oct. 1, 1970, Ser. No. 77,142

Claims priority, application Great Britain, Nov. 7, 1969, 54,647/69; Jan. 24, 1970, 3,563/70

Int. Cl. A24f *07/04*; A24d *01/04*

U.S. Cl. 131—10.5 16 Claims



Tobacco smoke filter having an axially extending tubular outer member and an axially extending air permeable inner member therewithin. The inner member is formed of filaments or fibers bonded to each other at their points of contact. At a first position the outer surface of the inner member is in engagement with the inner surface of the outer member to at least substantially preclude axial passage of smoke therebetween while at a second position, longitudinally spaced from the first, the filaments or fibers are formed into a portion of substantially smaller cross section to leave a hollow space through which smoke drawn through the filter may pass.

3,690,327

APPARATUS FOR REGULATING THE START AND TERMINATION OF DELIVERY OF COMPONENTS OF ROD-SHAPED ARTICLES IN FILTER CIGARETTE MACHINES OR THE LIKE

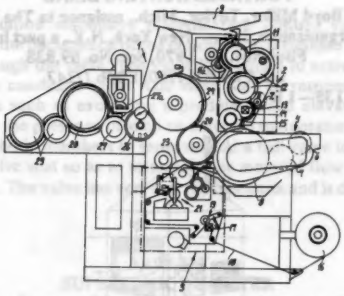
Bob Heitmann, Hamburg, Germany, assignor to Hauni-Werke Koerber & Co. K.G., Hamburg, Germany

Filed March 25, 1970, Ser. No. 22,626

Claims priority, application Germany, March 26, 1969, P 19 15 339.0

Int. Cl. A24c *05/34*, *05/52*, *05/58*

U.S. Cl. 131—21 R 9 Claims



A machine for the production and/or processing of tobacco-containing rod-shaped articles, particularly a filter cigarette machine, wherein the feeding units which supply components of rod-shaped articles (such as filter plugs and adhesive-coated uniting bands) can be arrested only when the components therein are located in a predetermined position with reference to other moving parts of the machine. The feeding units can resume the delivery of respective components only in certain predetermined positions of the movable parts. This reduces the number of rejects and insures that each component can be properly assembled with other components or otherwise manipulated as soon as the respective feeding unit is started.

3,690,328

WET PROCESSING OF TOBACCO STEMS

Rodolfo Quarenghi, Bologna, Italy, assignor to American Machine & Foundry Company

Filed April 20, 1970, Ser. No. 29,850

Int. Cl. A24b *03/04*, *05/10*, *09/00*

U.S. Cl. 131—140 R 2 Claims

In this invention tobacco stems and/or fragments of stems, and/or portions of tobacco leaves containing stems and veins are water soaked or wet softened by water and or steam to completely soak the stems and veins and dissolve part of their soluble organic and inorganic constituents. The wet softened stems and veins are then fed to a refiner where they are mechanically opened by crushing or rolling. Thereafter, the opened stems and/or veins are fed to a drier where the moisture content is reduced to the level of the cut tobacco with which they are to be mixed.

3,690,329

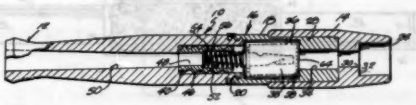
CIGARETTE HOLDER

Chu Siung Lin, No. 52, Lane 285 Chen-E Rd., Tainan, China /Taiwan

Filed May 4, 1971, Ser. No. 140,045

Int. Cl. A24f *13/06*

U.S. Cl. 131—201 6 Claims



A cigarette holder having a disposable, plastic, transparent trap for tars, held in place by a spring, with a smoke-cooling, metallic element having wide spiral threads positioned between the trap and the mouthpiece. The trap is located downstream of a cigarette holding socket and includes a cylindrical body having substantially closed ends, the upstream end being closed by a centrally apertured disc and the downstream end being closed by a disc having an annular array of smoke passing holes surrounding a peg extending downstream therefrom and having a tapered boss extending in an upstream direction into the interior of the trap and spaced radially inwardly from the wall of the cylindrical body. The boss is provided with spiral flutes in its exterior surface.

3,690,330

HAIR WAVING PICK

Raymond J. Grismer, 110 E. Main, Mandan, N. Dak.

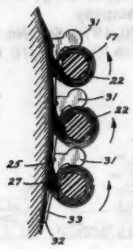
Filed Oct. 5, 1970, Ser. No. 78,029

Int. Cl. A45d *8/00*

U.S. Cl. 132—46 1 Claim

A hair curl fastened near the scalp on a curler or roller by a flexible band extending from one end of the roller to the other is held in close proximity to the head by passing a flexible pick between the roller and the band and between the roller and the scalp. Such a pick can be made of white nylon and in-

cludes a soft, flexible shank having either a blunted or rounded or pointed outer end, a shoulder extending integrally normally from the other end of the shank, and a finger piece integral with the shoulder opposite the shank. The presence of the shoulder on the shank provides an increasing stiffness of



the shank toward the shoulder end of the pick. Notch is provided in the shoulder-shank portion of the pick opposite the finger piece and near the end of the shank in position to receive the flexible band to prevent it from slipping off of the shoulder shank.

3,690,331

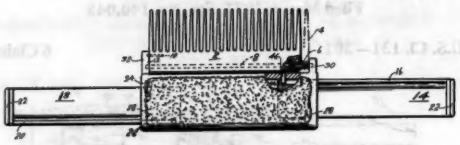
COMBINED BRUSH AND COMB

Thomas V. Messer, 747 Olympic Ave., Edmonds, Wash.

Filed Aug. 13, 1970, Ser. No. 63,359

Int. Cl. A45d *24/16*; B25q *1/04*

U.S. Cl. 132—120 **3 Claims**



A combined brush and comb having a body, brush tufts on an exterior surface of the body, a comb which may be adjusted for various angles with respect to the body of the brush and retractable handles for ease of gripping and positioning the brush and comb. The combination of the brush and comb has many practical advantages such as minimizing the possibility of losing the comb or not having it available when it is desired to use it with the brush, the advantage of having retractable handles which move into the body of the brush so as to save space, the advantage of packing one object, while traveling, instead of a separate brush and also a separate comb, the convenience of being able to keep the combined brush and comb in a desk drawer for a office worker or in a brief case for a person who visiting at another place of business and who wishes to freshen up immediately before entering the other place of business for an interview.

3,690,332

BILL AND COIN CHANGER

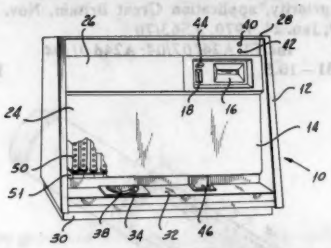
David B. Dykehouse, Muskegon; Oliver G. Okkonen, and Norman J. Zoodsma, both of Grand Rapids, all of Mich., assignors to Rowe International, Inc., Whippany, N.J.

Filed Dec. 22, 1969, Ser. No. 887,063

Int. Cl. G07d *1/06*

U.S. Cl. 133—2 **2 Claims**

A machine for changing currency such as bills or coins of larger denomination for change in the form of coins of a lower denomination. When a bill is to be changed, a settable group of coin ejectors is operated. When a coin is to be exchanged, for example a 50-cent piece, other groupings of coin ejectors are operated in combinations which can be varied at the option of the machine service personnel.



3,690,333

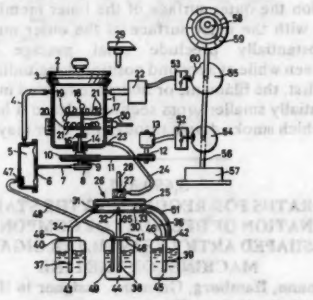
MACHINE FOR CLEANING SMALL PARTS

Hans Kierner, Bajerhammerstrasse, Salzburg, Austria

Division of Ser. No. 819,161, April 25, 1969, Pat. No. 3,594,230. This application May 17, 1971, Ser. No. 143,754

Int. Cl. B08b *3/04*

U.S. Cl. 134—95 **9 Claims**



An apparatus for cleaning small parts wherein there is utilized or provided pumps, control valves, rinsing liquid, a cleaning liquid, and a vacuum arrangement.

3,690,334

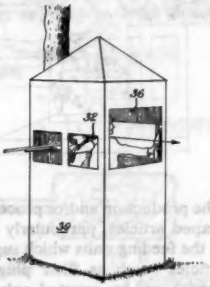
PORTABLE HUNTING BLIND

Herbert Boyd Miller, Taylor, Mich., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Nov. 16, 1970, Ser. No. 89,838

Int. Cl. A47f *1/00*; E04b *1/347*

U.S. Cl. 135—1 R **1 Claim**

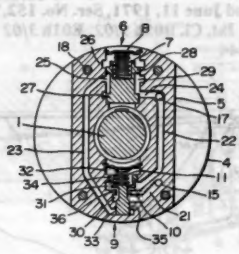


An opaque plastic housing with transparent windows and a plurality of elongated members adapted to be detachably secured together to form a frame which can be rolled up together when not in use. In use the frame is erected and enclosed by the housing.

3,690,335
HYDRAULIC GOVERNOR VALVE ASSEMBLY

Hirohisa Ichimura, Yokohama, Japan, assignor to Nisson Jidosha Kabushiki Kaisha, Yokohama, Japan

Continuation of Ser. No. 781,803, Dec. 6, 1968, abandoned.
This application Dec. 28, 1970, Ser. No. 102,151
Int. Cl. G05d *13/36*
U.S. Cl. 137—54 4 Claims

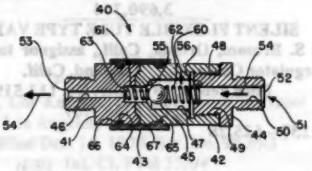


A hydraulic governor valve assembly for hydraulic control system of automatic transmission for vehicles provides low governor pressure at low vehicle speed range, stepwise or steeply increasing pressure at predetermined speed range and then rather gradually increasing governor pressure over the speed range to output circuit, and utilizes the governed pressure as pilot pressure while the low speed range.

3,690,336
CONDITION RESPONSIVE VALVE

Edward W. Drum, Indianapolis, Ind., assignor to Ransburg Electro-Coating Corp., Indianapolis, Ind.

Filed Sept. 8, 1970, Ser. No. 70,238
Int. Cl. F16k *17/36*
U.S. Cl. 137—75 15 Claims



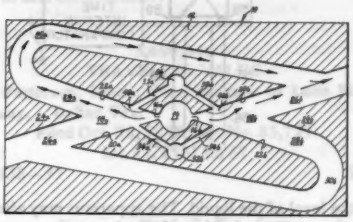
A condition responsive material flow control valve that reacts to the occurrence of the condition to terminate material flow through the valve. The valve is designed to activate only when the condition exists. The valve may be responsive to a condition such as exceeding a predetermined elevated temperature; the presence of such an elevated temperature causes adjacent body members to separate and a ball valve to engage with a valve seat so as to terminate the material flow through the valve. The valve has very few moving parts and is dependable.

3,690,337
SUPERSONIC DIVERTER

Joseph A. Lagana, Meriden, Conn., assignor to Chandler Evans Inc., West Hartford, Conn.

Filed Jan. 19, 1970, Ser. No. 3,834
Int. Cl. F15c *1/08*
U.S. Cl. 137—81.5 8 Claims

A supersonic diverter which provides supersonic streams of gas in either of two oppositely disposed power channels. Two oppositely directed supersonic fluid streams are both diverted into either a power channel or an augmentation channel by means of a supersonic fluidic switch. One supersonic stream is directed to a power channel and the oppositely directed fluid stream is directed into an augmentation channel where it is ducted to join the stream passing through the power channel. A switching device is employed to simultaneously divert the oppositely directed streams from the power channel to the augmentation channel in the one nozzle and from the augmentation channel and to the power channel in the other nozzle.

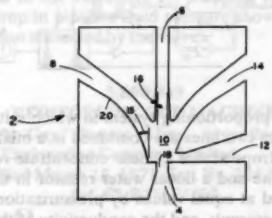


The diversion of the supersonic streams in each nozzle is controlled by varying the transverse pressure gradients established near a recirculation region between separation and attachment points in the diverging portions of the supersonic nozzles.

3,690,338
ONE SHOT FLUID GATE

Elmer L. Swartz, Annandale, Va., assignor to The United States of America as represented by the Secretary of the Army

Filed Jan. 21, 1971, Ser. No. 108,542
Int. Cl. F15c *1/08, 4/00*
U.S. Cl. 137—81.5 6 Claims



A device having an input channel, a receiver channel, and a dump channel communicating with a reaction chamber wherein an input signal of any duration supplied to the input channel will cause only a single narrow pulse at the output of the receiver channel. After the termination of the narrow pulse the one shot gate isolates the flow entering the input channel from the receiver channel by dumping any continuing flow in the input channel to the atmosphere.

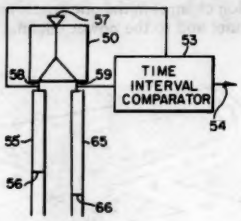
3,690,339
FLUIDIC POSITION SENSOR

Murdoch G. McKinnon; James N. Wilson, and Robert W. Besant, all of Saskatoon, Saskatchewan, Canada, assignors to Atomic Energy of Canada Limited, Ottawa, Ontario, Canada

Filed Oct. 24, 1969, Ser. No. 869,315
Int. Cl. F15c *1/08, 4/00*
U.S. Cl. 137—81.5 1 Claim

A position sensing apparatus, particularly suitable for sensing the level of a liquid, comprising a tubular member disposed within the liquid to be measured, and a fluidic element having a fluid supply and a first and second outlet. The first outlet is pressure load sensitive and is connected to the tubular member. The fluidic element may be a monostable or bistable wall attachment amplifier or logic device which switches in response to pressure waves and expansion waves reflected from the liquid surface within the tubular member,

and oscillates at a rate dependent on the level of the liquid. The frequency or period of oscillation is converted to a measure of the level of the liquid. The apparatus may also be used to sense the position of a piston in a tube.



3,690,340

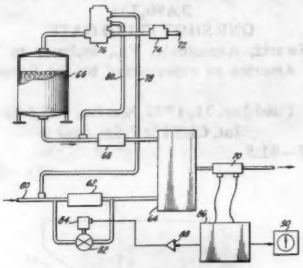
FLUID PROPORTIONING SYSTEM

Anatole J. Sipin, 117 E. 77th St., New York, N.Y.

Filed March 5, 1970, Ser. No. 16,823

Int. Cl. E03d 9/03; E03b 7/07; G05d 11/00

U.S. Cl. 137—93 **4 Claims**



A dialysate proportioning system in which salt concentrate and water from two lines are combined in a mixing chamber, the pressure drops across a linear concentrate resistor in the concentrate line and a linear water resistor in the water line are maintained at equal values by pressurization of the concentrate in a reservoir, and the conductivity of the dialysate is maintained by an electrical conductivity control which varies a trim valve bypassing the water resistor.

3,690,341

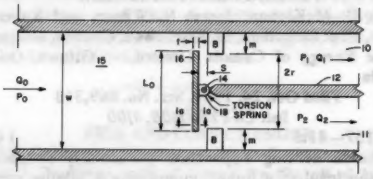
EQUAL FLOW DISTRIBUTOR

Adolph A. Sutko, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed April 21, 1971, Ser. No. 136,011

Int. Cl. G05d 11/00

U.S. Cl. 137—101 **3 Claims**



An equal flow distributor is adapted to take the flow from an inlet port and divide it equally between two outlet ports in such a manner that a deviation in pressure at either of the outlet ports will cause rotation of a butterfly valve and torsional spring combination to equal the flow between the outlet ports inspite of the change in pressure between the ports.

3,690,342

Patent Not Issued For This Number

3,690,343

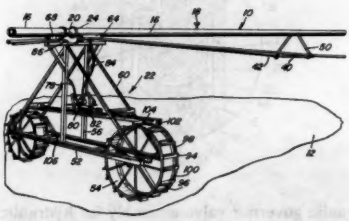
CIRCULAR IRRIGATION SYSTEM WITH HYDRAULIC DRIVE

Elmer Earl Crane, Rt. 1, Box 16, Springfield, Colo.

Filed June 11, 1971, Ser. No. 152,159

Int. Cl. B05b 9/02; E01h 3/02

U.S. Cl. 137—344 **10 Claims**



An elongated irrigation pipe movable in a circular path about a stationary central supply pipe and being supported by a plurality of wheeled towers each being individually driven by a hydraulic motor of the orbit or piston and cylinder type and being supplied with pressurized hydraulic fluid through a hydraulic system independent of the irrigation system and which utilizes tension elements of a truss structure supporting the irrigation pipe for circulation of pressurized hydraulic fluid. A two-way valve is connected in the hydraulic circuit at each tower for controlling the operating speed of each tower in response to misalignment of one irrigation pipe section in relation to an adjacent irrigation pipe section.

3,690,344

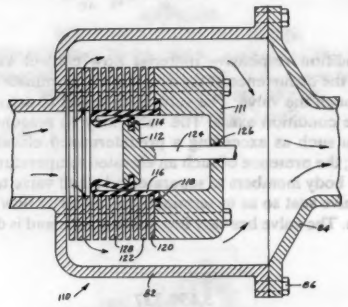
SILENT FLEXIBLE TUBE TYPE VALVE

Richard S. Brumm, Orinda, Calif., assignor to Grove Valve and Regulator Company, Oakland, Calif.

Filed Feb. 8, 1971, Ser. No. 113,519

Int. Cl. F16k 7/07

U.S. Cl. 137—625.28 **10 Claims**



A valve including a flexible tube normally firmly engaged around a cylindrical member, as by means of a control pressure, to prevent fluid flow through radial openings through the member. When the tube is progressively forced away from the surface of the member, as by overcoming the control pressure, flow through the member to a downstream flow passage is initiated. The flow openings are formed by a series of closely axially spaced, thin annular members providing a high length-to-cross section ratio between them. The annular members may be formed non-planar to increase the length of the flow path within the radial space requirements.

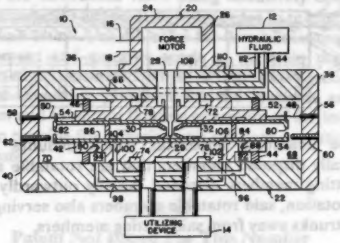
3,690,345
ELECTRO HYDRAULIC SERVO VALVE

Donald W. Ericson, 185 Westwood Dr., Birmingham, Mich.

Continuation of Ser. No. 636,910, May 8, 1967, abandoned. This application Sept. 8, 1970, Ser. No. 70,594The portion of the term of this patent subsequent to Oct. 21, 1986, has been disclaimed.

Int. Cl. F15b 5/00; F16k 11/07

U.S. Cl. 137—625.62 16 Claims



An electro hydraulic servo valve having a nozzle tube movable in accordance with an electrical signal and a spool movable in accordance with differential pressure produced through the nozzle tube to meter a variable volume of hydraulic fluid through the valve and means including an abutment for restricting or changing the movement of the nozzle tube relative to the applied electric signal during movement thereof to provide the electro hydraulic servo valve with a variable gain characteristic in that the spool follows the movement of the nozzle tube in one proportion before the nozzle tube engages the abutment and in another proportion after the nozzle tube engages the abutment.

3,690,346
Patent Not Issued For This Number

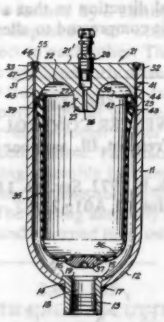
3,690,347
PRESSURE VESSEL

Abduz Zahid, Los Angeles, Calif., assignor to Greer Hydraulics, Inc., Los Angeles, Calif.

Filed Dec. 16, 1970, Ser. No. 98,593

Int. Cl. F16l 55/04

U.S. Cl. 138—30 1 Claim



This invention relates to the art of pressure vessels of the type having a cylindrical container, one end of which is closed and has a port, and the other end of which defines an open mouth. The container has a deformable bladder of resilient material positioned therein, said bladder having a large mouth with an annular supporting member secured thereto and extending outwardly therefrom. The free edge portion of the supporting member which is longitudinally spaced from the region where the bladder is secured thereto, extends into an annular groove defined between the inner surface of the open mouth of the container and the outer periphery of a cover member positioned in the upper portion of the supporting member, the opposed surfaces of the annular groove and the free edge portion of the supporting member being bonded together to seal the container.

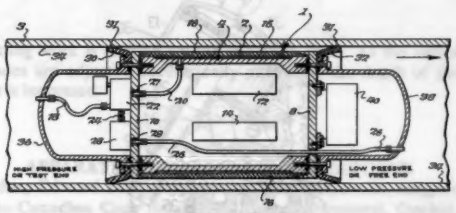
3,690,348
TRAVELING VALVE

Billy R. Patterson, Diana, Tex., assignor to Lone Star Steel Company, Dallas, Tex.

Filed Oct. 26, 1970, Ser. No. 83,729

Int. Cl. F16l 55/18

U.S. Cl. 138—97 9 Claims



The present invention comprises a novel pipeline valve transportable by pipeline fluid adapted for isolating pipeline sections to permit location of a leak, and to stop the flow of pipeline fluid. The invention also concerns a novel process for isolating sections of a pipeline to permit location of a leak. The novel valve contains means for controlling the flow of the pipeline fluid in the valve and for stopping the valve when desired. A drop in pipeline fluid pressure shows a leak in the pipeline section traversed by the valve.

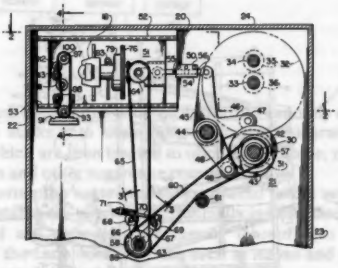
3,690,349
REINFORCING ROD MACHINE

Pierre Donche-Gay, Buenos Aires, Argentina, assignor to American Engineering Company Limited

Filed March 15, 1971, Ser. No. 124,007

Int. Cl. B21f 25/00

U.S. Cl. 140—63 3 Claims



A machine for the manufacture of reinforcing rod having spaced apart flattened portions wound with turns of smaller diameter rod has a pair of constantly turning forming rollers which feed the rod between them and form the spaced apart flattened portions and the machine has a reciprocating winding head which winds turns about the flattened portions of the rod while advancing with the rod. A drive for the forming rollers rotates cams which oscillate a yoke which reciprocates the winding head. The drive for the forming rollers also, through sprockets and a chain, rotates the winding head arbor. The chain driving the winding head arbor incorporates a spring chain tightener to compensate for the oscillation of the wind-

ing head. The reciprocation of the winding head causes a sector gear on the winding head engaging a fixed rack to drive rod metering rollers which extend smaller diameter rods to be wound about the flattened portions of the reinforcing rod.

3,690,350

PACKAGE STRAPPING TOOLS

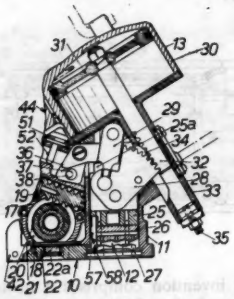
Robert David Sansum, Harpenden, England, assignor to Gerrard Industries Limited, London, England

Filed Oct. 20, 1970, Ser. No. 82,422

Claims priority, application Great Britain, Oct. 24, 1969, 52,096/69

Int. Cl. B21f 9/02

U.S. Cl. 140—93.2 **10 Claims**



A strapping tool by means of which the overlapped ends of a loop of strapping are secured together after that loop has been arranged and tightened around a package. A fluid pressure operated ram is coupled to a rack in mesh with an angularly movable toothed member connected by a toggle linkage to a linearly movable element of the jointing means.

3,690,351

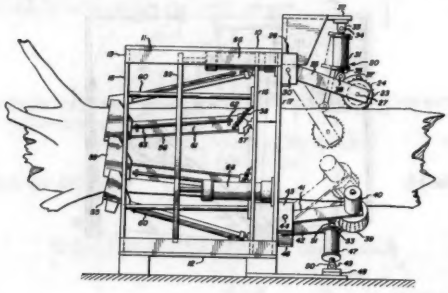
LIMB REMOVING APPARATUS

Carl G. Strickland, P.O. Box 592, Port Gibson, Miss., and Walter D. Clark, 1211 Lancaster Dr., Alexandria, La.

Filed Oct. 5, 1970, Ser. No. 77,974

Int. Cl. A01g 23/02

U.S. Cl. 144—2 Z **6 Claims**



An apparatus for removing limbs from the trunk of a tree in which a hydraulically-activated compression ring operates to keep a segmented circular array of curved cutter blades in intimate branch-shearing contact with a tree trunk of variable size as said tree is fed endwise through the machine. The cutter knives are attached to the free ends of pivotally-mounted elongated support arms, and the compression ring is slidably attached to the outside of each of the support arms. The tree is pulled through the machine by hydraulically-powered, spiked rollers.

3,690,352

APPARATUS FOR DELIMBING TREES

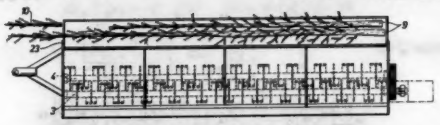
Kjell Olof Gunnar Herolf, Sundsbruk, Sweden, assignor to Kockum Soderhamn AB, Fack, Sweden

Filed Sept. 14, 1970, Ser. No. 71,929

Claims priority, application Sweden, Sept. 18, 1969, 12891/69

Int. Cl. A01g 23/02

U.S. Cl. 144—2 Z **17 Claims**



A tree delimbing apparatus which includes elongated horizontally disposed members that are rotatable and which have cutting members disposed radially outwardly from the axis of rotation, said rotatable members also serving to space the tree trunks away from said cutting members.

3,690,353

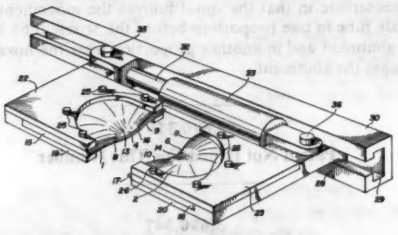
TREE CROSS-CUTTING BLADE ASSEMBLY

John S. Johnston, and Andre St-Laurent, both of Ottawa, Ontario, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Filed Oct. 19, 1970, Ser. No. 81,774

Int. Cl. A01g 23/02

U.S. Cl. 144—34 R **5 Claims**



Tree cross-cutting blade assembly are each trough-shaped with outwardly inclining sides leading from a bottom of the trough which slopes downward and terminates as the blade cutting edges. The blades are mounted for movement towards one another along paths which are substantially straight when viewed in a horizontal direction so that a portion of the tree between the troughs is compressed to alleviate splitting while it is being cut.

3,690,354

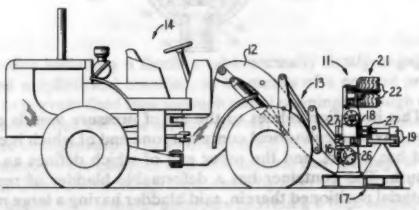
TREE HARVESTER CONTROL CIRCUIT

Raymond L. Moser, Tremont, Ill., assignor to Caterpillar Tractor, Peoria, Ill.

Filed Feb. 8, 1971, Ser. No. 113,327

Int. Cl. A01g 23/02

U.S. Cl. 144—34 R **19 Claims**



A control circuit for a tree harvester having a processing implement and a shear assembly for cutting standing trees with a

drive mechanism for propelling the tree past the implement and grapples for maintaining the tree in engagement with the drive mechanism. A single control valve is operable into a first position for actuating the shear assembly and into a second position for retracting the shear assembly and operating the drive mechanism. A directional valve provides operating fluid for positioning the grapples and implement in engagement with the tree while the control valve is in either of its operating positions, the directional valve being selectively operable to retract the grapples and implement in order to release the tree from the harvester. A check valve for communicating fluid to the implement and grapples tends to maintain those components in engagement with the tree while also functioning to coordinate operating pressures for the grapples and drive mechanism and to permit floating operation of the implement in order to provide for effective and efficient operation of the tree harvester.

3,690,355

Patent Not Issued For This Number

3,690,356

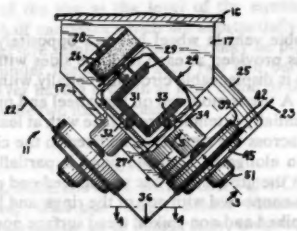
CUTTER ASSEMBLY FOR A WOODWORKING MACHINE

Leif A. Holan, Rt. 1, Chimney Rock, Winona, Minn.

Filed June 5, 1970, Ser. No. 43,673

Int. Cl. B27b *5/20, 5/32*

U.S. Cl. 144—136 R **8 Claims**



A woodworking machine for cutting a plurality of oriented V-grooves in a wood panel to effect simple cabinet fabrication. The grooves are formed by a cutting assembly having a pair of rotary cutters disposed at 45° with respect to the table and at 90° with respect to each other. The cutters have intermeshed teeth and are synchronously driven by a single electric motor through a gear transmission. The cutter assembly is carried on a track supported by an overhead frame and is arranged to pass over the wooden panel in cutting relation, which rests on a horizontal table. The machine includes means for lowering the cutting assembly to a desired position above the table and advancing the assembly with respect to the panel to form the groove. The cutting assembly is then elevated to a non-cutting position and returned to its initial position.

3,690,357

ADJUSTABLE DEPTH GROOVE CUTTER AND SUPPORT THEREFOR

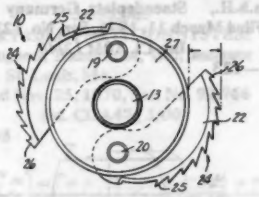
Roberto Lugo, Av. Nacional 45, Panama, Panama

Filed July 7, 1970, Ser. No. 52,847

Int. Cl. B27b *33/12*; B27g *13/14*

U.S. Cl. 144—232 **3 Claims**

An adjustable depth groove cutter and support therefor for mounting on the spindle of a shaping machine. The cutter head includes a base plate having upstanding pivot pins formed thereon. A cutter having a plurality of groove cutting teeth is mounted on each pivot pin for eccentric adjustment with respect to the axis of rotation of the cutter head. The cutting tooth arrangement on the cutting blades is such that each tooth removes a small portion of the total cut so that the



cutting work is divided among all of the teeth. As the cutter blades are adjusted eccentrically outwardly the depth of the cut is increased.

3,690,358

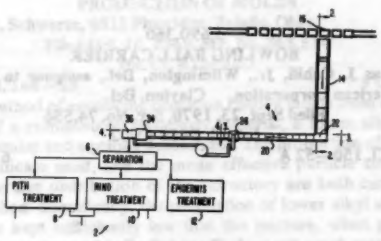
APPARATUS FOR PROCESSING SUGARCANE

Sydney Edward Tilby, Winterburn, Alberta, Canada, assignor to Canadian Cane Equipment, Ltd., Montreal, Quebec, Canada

Division of Ser. No. 714,896, March 21, 1968, Pat. No. 3,567,511, Continuation-in-part of Ser. Nos. 692,185, Dec. 20, 1967, Pat. No. 3,509,293, and Ser. No. 692,237, Dec. 20, 1967, Pat. No. 3,566,944. This application Jan. 4, 1971, Ser. No. 103,364

Int. Cl. B02c *18/00*; A01d *55/00*; B07b *4/08*

U.S. Cl. 146—119 **3 Claims**



A process is provided which transforms randomly oriented sugarcane stalks into their pith, rind and epidermis components which are then treated to obtain sugar juice, pith floc, cane fibers and other sugarcane commodities.

In delivering the sugarcane stalk material to the separating zone, the stalks are aligned longitudinally in their direction of travel and are chopped transversely thereof into shorter lengths. If the cane contains trash such as leaves and rocks, a fluid is directed through it to remove the trash.

At the separating zone the chopped stalks are separated into their pith, rind and epidermis components. This is done by opening up longitudinally each chopped stalk into separate portions which are then flattened. As the flattened stalk material is fed through the zone, pith is milled away from one side and epidermis material is milled away from the opposite side. The components are then recovered and can be further treated.

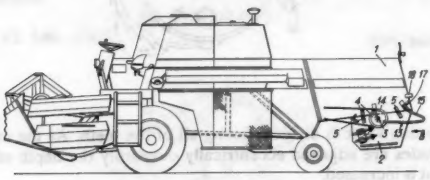
The treatment of the pith comprises a washing and pressing operation to extract the juice from the pith. The rind is reduced into smaller portions such as chips or shreds which are then contacted with water to extract water solubles from the rind. The epidermis can also be treated to separate wax bearing material from certain other epidermis material.

3,690,359

APPARATUS FOR MOUNTING AN ACCESSORY ON A COMBINE

Alfred Johannes Wenzel, Obering, and Alwin Hantel, Schlehenweig, both of Germany, assignors to Massey-Ferguson G.m.b.H., Staendeplatz, Germany

Filed March 11, 1971, Ser. No. 123,206
Int. Cl. A01f 12/40
U.S. Cl. 146—123 10 Claims



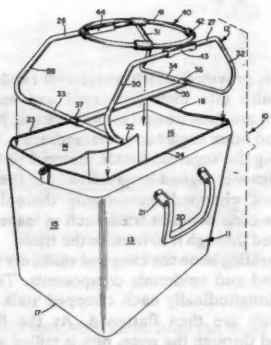
Apparatus for mounting an accessory, for example a straw chopper, on a combine harvester so that the accessory can be moved manually by a single operator from an "in-use" position to an unobtrusive "out-of-use" position. The accessory is carried on rails mounted on opposite sides of the combine and having upturned ends. A pair of aligned support members are provided on opposite sides of the accessory and adjacent its center of gravity for engagement with the rails. The accessory is moved from its in-use position to its out-of-use position by sliding or rolling it along the rails and then pivoting it about the support members.

3,690,360

BOWLING BALL CARRIER

Thomas J. Cahill, Jr., Wilmington, Del., assignor to Rapid-American Corporation, Clayton, Del.

Filed Sept. 23, 1970, Ser. No. 74,556
Int. Cl. B65d 65/02
U.S. Cl. 150—52 A 6 Claims



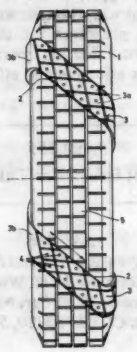
A carrying case is provided, which is adapted, among other things, to be used for the carrying of a bowling ball therein, in conjunction with the carrying of other items, such as bowling shoes, with apparatus for seating the bowling ball being movable in order to permit access to shoes also contained within the case.

3,690,361

ANTI-SKID ARRANGEMENT FOR WHEELED VEHICLES

Herbert Waldmann, Dauchinger Str. 28, 722 Schwenningen, Germany

Filed July 27, 1970, Ser. No. 58,512
Claims priority, application Germany, July 28, 1969, P 19 38 182.9
Int. Cl. B60b 15/00; B60c 11/00
U.S. Cl. 152—216 30 Claims



A rotatable vehicle wheel has two oppositely facing axial sides and is provided at each of these sides with a mounting ring which is displaceable circumferentially with reference to the wheel. A tire is mounted on the wheel and provided on its circumferentially extending tread face with at least one groove extending across the tread face inclined to the circumference thereof. An elongated anti-skid band is partially and sliably received in the groove and has two spaced end portions each of which is connected with one of the rings, and longitudinally adjacent spiked and non-spiked tread surface portions located intermediate the end portions. A displacing arrangement can be actuated for causing stepwise longitudinal sliding travel of the band in the groove so as to either expose the spiked or the non-spiked tread surface portion of the band in this groove depending upon whether the non-skid properties of the band are to be utilized or not. At least one actuating element is connected with the mounting rings and rotates with the wheel, moving during such rotation in a predetermined path and being operable for effecting actuation of the displacing arrangement. Operator-controllable triggering means is provided and is movable between a rest position and an actuating position. In the latter it extends into the predetermined path of movement of the actuating element and in response to contact with the same triggers operation of the actuating element at least once during each revolution of the wheel.

3,690,362

HIGH STRENGTH POLYETHYLENE TEREPHTHALATE YARN AND CORD PRODUCED THEREFROM

Brij Mohan Mago, Richmond, and James Isaac Bruton, Colonial Heights, both of Va., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Sept. 28, 1970, Ser. No. 76,290
Int. Cl. D02g 3/48; B60c 9/00; D02g 3/02
U.S. Cl. 152—359 7 Claims

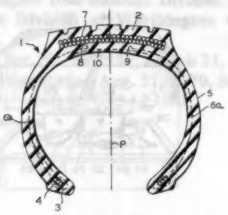
A product and process for the production of high strength polyethylene terephthalate tire cord by producing an ultra high strength polyethylene terephthalate fiber that is translatable into an improved high strength tire cord by using an improved tensilization process.

3,690,363

GLASS CORDS AND TIRES AND SIMILAR RUBBER ARTICLES REINFORCED THEREWITH

Raymond Guyot, Paris, France, assignor to FIVEREL, Societe Civile d'Etudes et de Recherches, Paris, France

Filed Nov. 13, 1970, Ser. No. 89,293
Int. Cl. B60c 9/08
U.S. Cl. 152—359 6 Claims



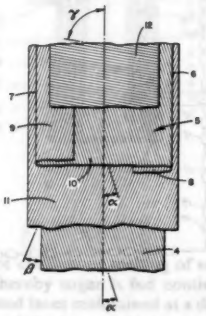
Cords, particularly adapted for the reinforcement of tires as radial carcasses, composed of glass filaments individually coated with an elastomer sheath, such cords being characterized by a corrected primary twist factor greater than 90, a corrected secondary twist factor greater than 130 and an elongation at rupture of less and 3.5 percent. The glass cords constituting the radical carcass are preferably interrupted under the breaker of the tire at the level of the equatorial plane forming two half carcasses which are substantially symmetrical. A substructure reinforcement layer may be placed under the breaker under the ends of such two half carcasses, the reinforcing layer having a width at least equal to the distance that separates the two half carcasses.

3,690,364

RADIAL TIRE HAVING BREAKER STRUCTURE

Carlo Barassi; Giuseppe Lugli; Mario Mezzanotte, and Romano Guermandi, all of Milan, Italy, assignors to Industrie Pirelli S.p.A., Milan, Italy

Filed April 30, 1971, Ser. No. 138,895
Claims priority, application Italy, May 5, 1970, 24174 A/70
Int. Cl. B60c 9/18
U.S. Cl. 152—361 8 Claims



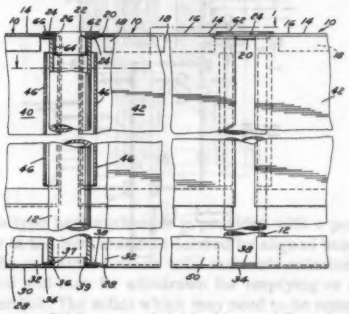
The invention relates to improvements in the breaker structure for radial type pneumatic tires. The structure according to the invention comprises at least two superposed strips of textile material having at least one strip of metallic material interposed therebetween and an additional metallic or equivalent strip arranged radially outermost of the aforementioned strips. The improvement in the present invention resides in the fact that at least one of the textile strips is folded so as to provide a fold line along each edge of the structure.

3,690,365

PORTABLE PARTITION SYSTEM

Walter W. Thompson, Hazelhurst, Ga., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Nov. 25, 1970, Ser. No. 92,766
Int. Cl. A47g 5/00
U.S. Cl. 160—135 2 Claims



A portable partition system for subdividing an interior spaced comprising upright partition sections arranged edge to edge and pivotally connected by elongated vertical hinge members. The panel sections are constructed to visually close the joints between the partition sections.

3,690,366

PRODUCTION OF MOLDS

Carl H. Schwartz, 4821 Pineridge, Toledo, Ohio

Filed Oct. 10, 1969, Ser. No. 865,514
Int. Cl. B22c 9/02
U.S. Cl. 164—25 9 Claims

A method of producing precision casting molds from a mixture of a comminuted refractory material, a lower alkyl silicate binder and a gelling accelerator. The proportion of lower alkyl silicate used, and the mean effective particle size and particle size distribution of the refractory are both carefully controlled. Specifically, the proportion of lower alkyl silicate used is kept sufficiently low that the mixture, when placed against a pattern and allowed to gel, does not crack upon prolonged standing under ambient conditions, while a refractory is used substantially all of which is finer than 8 mesh and in which the particle size is graduated so that a substantial proportion is finer than 200 mesh and a substantial proportion is coarser than 100 mesh, while the bulk density is sufficiently high that, at the required low proportion of alkyl silicate, the mixture can be placed in mold-forming relationship with a pattern and, upon gelling of the alkyl silicate, will form a rigid mold. Apart from control of the proportion of lower alkyl silicate used and of particle size of the refractory, the process is conventional, and involves producing the mixture, applying the mixture in mold-forming relationship to a pattern, allowing the lower alkyl silicate to gel, and ultimately firing the mold.

3,690,367

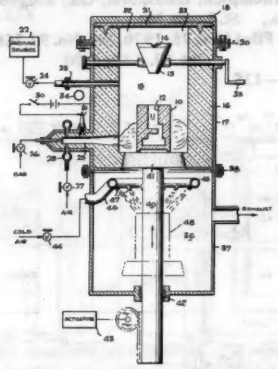
APPARATUS FOR THE RESTRUCTURING OF METALS

Floyd La Mar Daniels, Los Angeles, Calif., assignor to Anadite Incorporated, South Gate, Calif.

Filed July 5, 1968, Ser. No. 742,875
Int. Cl. B22d 41/00
U.S. Cl. 164—335 4 Claims

The apparatus and method for effecting the restructuring of metals disclosed herein provides a container for holding mol-

ten metal in a controlled atmospheric or vacuum environment into which an open-ended shell mold is immersed so that the wall of the mold separates and confines molten metal intended to be formed from the surrounding molten mass. A chill means is placed in engagement with the confined molten metal at the



top opening of the mold which begins solidification thereof at the molten metal interface. Means are provided for moving the chill means so that the solidified portion of the formed part is withdrawn from the mold as required. Planned withdrawal of the solidified portion creates a continuously new interface area which then progressively solidifies until the formed part is completed.

3,690,368

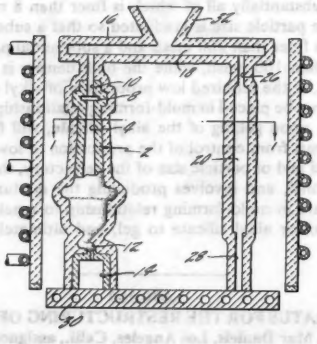
CASTING SINGLE CRYSTAL ARTICLES

Stephen M. Copley, Madison; Anthony F. Giamei, Middletown; Merton F. Hornbecker, Woodbury, and Bernard H. Kear, Madison, all of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Continuation-in-part of Ser. No. 714,722, March 20, 1968, abandoned. This application Aug. 14, 1970, Ser. No. 63,738

Int. Cl. B22c 9/04, 9/22

U.S. Cl. 164—350 **11 Claims**



Apparatus for the formation of single crystal articles by directionally solidified casting techniques which substantially eliminates the formation of heterogeneous discontinuities in the casting.

3,690,369

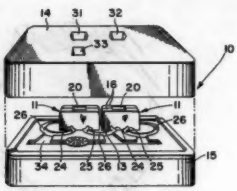
APPARATUS FOR MAKING CAST CHAIN

J. Stanley Wheeler, Baltimore, Md., assignor to Unitec Industries, Inc., York, Pa.

Filed Nov. 27, 1970, Ser. No. 93,261

Int. Cl. B22c 9/22

U.S. Cl. 164—351 **5 Claims**



A method and apparatus for casting a plurality of spaced apart chain links and connecting links therebetween in the same molding apparatus. The molds for casting the spaced apart links are formed in the cope and drag portions of the molding apparatus, and the adjacent sides of the molds are intersected by elongated vertical recesses which receive upstanding core assemblies containing arcuate passages to complete the molds for the spaced apart links. The upstanding core assemblies also contain molds for casting vertical connecting links between the horizontally spaced apart links. After casting two or more such plural link chains, they may be connected together to provide a chain of any desired length by casting connecting links between the end links of each chain using other core assemblies.

3,690,370

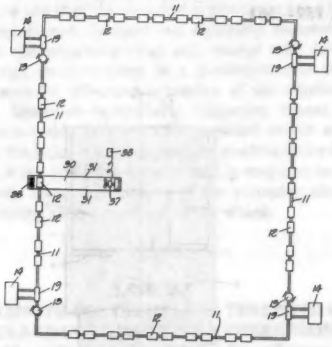
COOLING SYSTEM

James R. Piper, 6405 W. Chartres Dr., Palos Verdes, Calif.

Filed Feb. 11, 1970, Ser. No. 10,418

Int. Cl. B60h 1/00

U.S. Cl. 165—22 **20 Claims**



A series-loop cooling system for cooling individually several zones within a building or several buildings includes a closed circuit having for each zone and within series in the circuit the heat exchange coil of a heat exchange unit which utilizes and incorporates the standard structural members of a building or of several buildings. A cooling medium is circulated continually through the circuit and the heat exchange coil of each

heat exchange unit and thermostatically controlled fans in each heat exchange unit are adapted to pass air over the heat exchange coils and distribute the same into the temperature controlled zones.

3,690,371

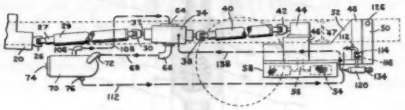
LIQUID COOLER ASSEMBLY

Olin E. Potter, Wilbraham, and Biagio J. Tomasi, South Hadley Falls, both of Mass., assignors to Worthington Compressor and Engine International Division of Worthington Corporation, a Division of Worthington Corporation, Holyoke, Mass.

Continuation of Ser. No. 809,187, March 21, 1969, Pat. No. 3,588,288. This application Aug. 21, 1970, Ser. No. 65,905

Int. Cl. G25d *23/00*

U.S. Cl. 165—35 **4 Claims**



A compact oil cooling assembly suitable for a vehicle-mounted air compressor. Two oil cooling cores are operatively joined with a cooling fan by means of a shroud so that air flow generated by the fan passes serially through the cores for counter current flow cooling of the oil. The fan is disposed at one end of the shroud in a plane substantially perpendicular to the plane of the cooling cores at the other end of the shroud.

3,690,372

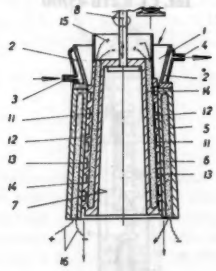
APPARATUS FOR CONTINUOUS MELTING OF SUGAR

Gunter Niebisch, Hannover-Bemerode, Germany, assignor to Otto Hansel GmbH, Hannover, Germany

Filed June 9, 1969, Ser. No. 831,679

Int. Cl. F25b *29/00*

U.S. Cl. 165—64 **1 Claim**



An apparatus for continuous melting of sugar of the sweet manufacturing, whereby sugar is fed continuously in a thin layer between heated faces maintained at a distance determining the thickness of the layer, which comprises two closed members formed as cylinders or cones defining two cylinder- or cone-jacket faces and disposed spaced apart from each other. Means are provided for rotating at least one of the members about its longitudinal axis and driver means extend from the faces into the space defined therebetween and are adapted to feed the sugar during its melting process from the entrance to the exit.

3,690,373

PLATE HEAT EXCHANGERS

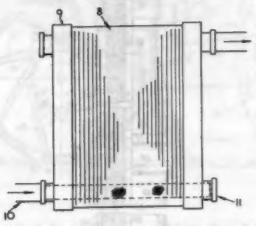
Felix William Wright, Copthorne Bank, NR. Crawley, England, assignor to The A.P.V. Company Limited, Crawley, England

Filed Oct. 17, 1969, Ser. No. 867,278

Claims priority, application Great Britain, Oct. 29, 1968, 51,197/68

Int. Cl. F28f *19/06*

U.S. Cl. 165—119 **11 Claims**



A plate type heat exchanger is provided with a permeable container in the inlet manifold formed by aligned holes in the plates. The container collects solid materials entrained in the feed liquid and may be withdrawn for emptying or replacement when full. The solids which may need to be removed before the liquid enters the heat exchanger flow passages include detached pipe line scale and live material grown in the pipework. The container may be open-topped or of closed section and means may be provided for spacing it from the edges of the holes forming the manifold.

3,690,374

GAS COOLER, FOR COOLING SYNTHESIS GAS, FISSION GAS, AND SIMILAR GASES

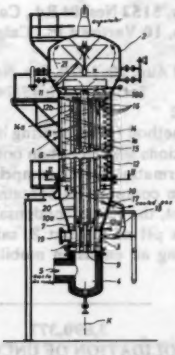
Frohmut Vollhardt, Siegen-Burbach, Germany, assignor to Siegener Aktiengesellschaft Geisweid, Huttental-Geisweid, Germany

Filed April 8, 1970, Ser. No. 26,511

Claims priority, application Germany, April 10, 1969, P 19 18 171.6

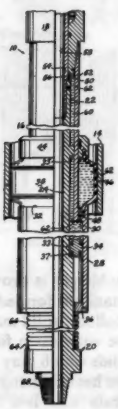
Int. Cl. F24h *1/14*

U.S. Cl. 165—157 **6 Claims**



An apparatus for cooling gases, especially fission gas and synthesis gas, which includes an upright tank in which gas conveying tubes are arranged around the tank axis while an inner cylinder is coaxially arranged in radially inwardly spaced relationship to said tubes which latter are surrounded by an outer cylinder coaxially arranged therewith, said outer cylinder forming together with said inner cylinder an annular space having a cross-section approximately equaling the free cross-section of said inner cylinder.

3,690,375
INFLATABLE PACKER
Harold E. Shillander, 4 Plaza Escalante, 414½ Central S.E., Albuquerque, N. Mex.
Continuation-in-part of Ser. No. 847,060, Aug. 4, 1969, Pat. No. 3,575,238. This application April 5, 1971, Ser. No. 131,305
Int. Cl. E21b *33/127*
U.S. Cl. 166—187 2 Claims



An elongated tubular body connected with a well string in a borehole telescopically receives a centrally bored mandrel having means forming pistons slidable in fluid containing reservoirs formed between the wall of the body and one end portion of the mandrel. A dilatable and collapsible member surrounding and connected to the body intermediate its ends defines an inflation chamber communicating with the fluid reservoirs. Spring means, surrounding the tubular mandrel, normally urges the mandrel and body in telescopic extended relation.

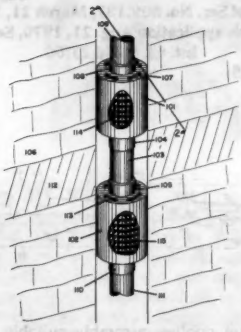
3,690,376
OIL RECOVERY USING STEAM-CHEMICAL DRIVE FLUIDS
Robert W. Zwicky, 5152 Nesbitt Rd., Calgary 47, Alberta, and Robert M. Gies, 10 Vartown Pl., Calgary 45, Alberta, both of Canada
Filed Aug. 20, 1970, Ser. No. 65,669
Int. Cl. E21b *43/24*
U.S. Cl. 166—272 3 Claims

An improved method for recovering hydrocarbons from underground formations which contain both hydrocarbons and a polyvalent salt formation water comprises injecting into said formation a steam composition containing a basic salt and a sequestering agent, the steam condensate of said steam composition having a pH of at least 8, said steam composition capable of forming an emulsion mobility front and a steam drive.

3,690,377
THE CONSOLIDATION OF UNCONSOLIDATED FORMATIONS
Bruce L. Knight, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio
Filed April 5, 1971, Ser. No. 131,443
Int. Cl. E21b *33/138*, *43/00*
U.S. Cl. 166—288 7 Claims

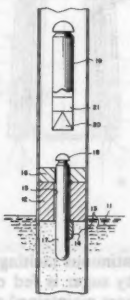
Unconsolidated subterranean oil-bearing formations are consolidated by simultaneously injecting molten elemental sulfur and a gas into the formation in the immediate vicinity of the wellbore and allowing the molten sulfur to solidify. Optionally, that portion of the formation to be solidified may be treated with a micellar dispersion to remove the formation fluids.

3,690,378
WELL COMPLETION METHOD AND APPARATUS FOR EXPLOSIVE STIMULATION
Karl M. Land, Tulsa, Okla., assignor to Cities Service Oil Company, Tulsa, Okla.
Filed Sept. 30, 1970, Ser. No. 76,893
Int. Cl. E21b *33/13*, *43/26*
U.S. Cl. 166—299 5 Claims



Disclosed is a method and apparatus for preventing damage to the tubular goods and cement sheath of wells during an explosive stimulation treatment. The invention includes the use of honeycomb structured casing joints to absorb the damaging shock energy emanating from explosions, used to stimulate producing zones, by the placement of the honeycomb casing in the casing string above and below the wellbore zone to be stimulated.

3,690,379
PLACEMENT AND DETONATION METHOD FOR EXPLOSIVE FRACTURING
Ronald S. Bullen, Calgary, Alberta, Canada, assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Oct. 21, 1970, Ser. No. 82,668
Int. Cl. E21b *43/00*
U.S. Cl. 166—299 4 Claims



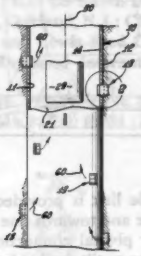
A method of oil or gas well stimulation wherein a liquid explosive is injected into the formations and subsequently detonated. An explosive charge is placed proximate the formations containing the liquid explosive and a detonating device is lowered to actuate the explosive charge and liquid explosive.

3,690,380

WELL APPARATUS AND METHOD OF PLACING APERTURED INSERTS IN WELL PIPE

Donovan B. Grable, 2515 San Francisco Ave., Long Beach, Calif.

Filed June 22, 1970, Ser. No. 47,957
Int. Cl. E21b 43/11, 29/00
U.S. Cl. 166—298 16 Claims



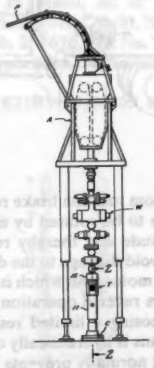
A projection containing through porting is displaced endwise and relatively through a well casing wall to cause the projection to penetrate the surrounding formation. The displacement is completed when the through porting bridges the casing wall, thereby to channel the production flow through such porting.

3,690,381

TUBING HANGER ASSEMBLY AND METHOD OF USING SAME FOR HANGING TUBING IN A WELL UNDER PRESSURE

Damon T. Slator, and Archie W. Peil, both of Houston, Tex., assignors to Bowen Tools, Inc.

Filed Oct. 16, 1970, Ser. No. 81,313
Int. Cl. E21b 33/03, 43/00
U.S. Cl. 166—315 2 Claims



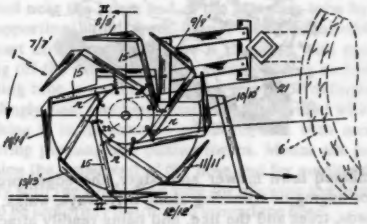
A tubing hanger assembly and method of using same for hanging tubing in a well under pressure, wherein tubing having a smooth external surface and a check valve at its lower end, is gripped and sealed off in the hanger and then the wellhead equipment above the tubing hanger is removed so that the tubing is thereafter available for injecting chemicals into the well and for performing similar well operations.

3,690,382

APPARATUS FOR PULLING OUT ROW CROP PLANTS

Keith Douglas Bradbury, Juramento 3361, 7° "B", Buenos Aires, Argentina

Claims priority, application Brazil, Dec. 16, 1969, 215,207
Filed Dec. 8, 1970, Ser. No. 96,221
Int. Cl. A01d 25/04
U.S. Cl. 171—56 1 Claim



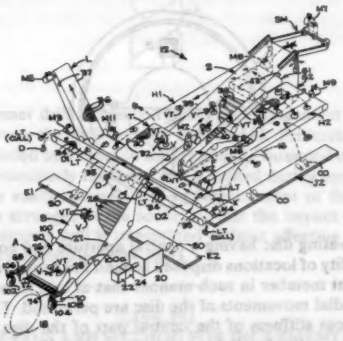
A self-lubricating harvester machine for harvesting row crops that is connected to and powered by a tractor includes a plurality of pairs of grasper-cutter devices that are arranged circumferentially in a protruding fashion from the peripheral of a wheel-like structure. Power-driven mechanisms are associated with the two formed wheel-like structures and operate the grasper-cutter devices that grasp, cut and pull the row crop as the devices contact the ground and that move to an open position upon leaving the ground to discharge the row crops.

3,690,383

SOIL MOLDING HARVESTER PICKUP

William G. Malley, San Jose, and David W. Cayton, Cupertino, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 19, 1970, Ser. No. 65,046
Int. Cl. A01d 17/06
U.S. Cl. 171—126 3 Claims



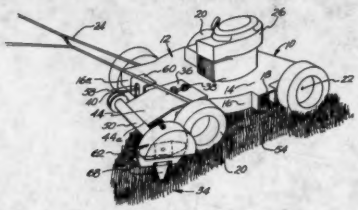
A vine crop pickup or harvesting mechanism has a leading rotating cutter bar that is advanced along a planting ridge under the surface of the soil for uprooting the vines and a trailing rotating elevator bar that is advanced above the surface of the soil to transfer the severed vines, and any loose fruit from the vines, onto a trailing removal conveyor. To prevent loose fruit and the vines from falling off the sides of the normally rounded planting ridge, soil crowding plates are disposed at the ends of the bars to raise a ramp of soil extending fore and aft of the bars at each side of the ridge, and also form an entrance throat for the vines and loose fruit.

3,690,384

COMBINED LAWN MOWER AND EDGER

Luther E. Patterson, 315 N. High St., Covington, Ohio

Filed Nov. 3, 1971, Ser. No. 195,118
Int. Cl. A01b *45/00*
U.S. Cl. 172—15 10 Claims



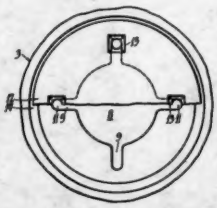
A combined lawn mower and edger, the edger providing means for edging or trimming along driveways, walks, curbs, flower beds, trees and the like, and being readily attached to or detached from a lawn mower. The edger blade assembly of the edger is secured to one end of an edger shaft rearwardly and laterally of the wheeled carriage of the lawn mower and arranged to rotate at all times in a substantially vertical plane clear of the ground when all wheels of the carriage are in contact with the ground and the edger is in a normally non-edging position spaced from the soil. The edger blade assembly is lowered, guided and raised, as desired, from a normally non-edging position, wherein the edger blade assembly is spaced from the soil, to an edging position, wherein the edger blade assembly engages the soil, while the motor is in operation, by pivoting the carriage of the lawn mower on its rear wheels.

3,690,385

CULTIVATING IMPLEMENTS

Stanley Marian Weiss, 9 Savage St., Geelong, Victoria, Australia

Filed Sept. 8, 1970, Ser. No. 70,459
Claims priority, application Australia, Sept. 9, 1969, 60648/69
Int. Cl. A01b *15/16, 23/06*
U.S. Cl. 172—604 8 Claims



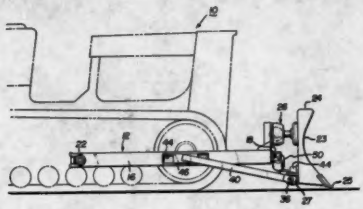
A cultivating disc having a central aperture and connected at a plurality of locations disposed around the central aperture to a mount member in such manner that at said locations localized radial movements of the disc are permitted. The aperture reduces stiffness of the central part of the disc and the permitted localized radial movements enable this central part to behave elastically whereby fractures are minimized.

3,690,386

ANGLE AND TILT MECHANISM FOR DOZER BLADE

Kenneth L. Magee, Racine, Wis., assignor to J. I. Case Company, Racine, Wis.

Filed Aug. 5, 1970, Ser. No. 61,179
Int. Cl. A01b *3/76, 59/048*
U.S. Cl. 172—804 10 Claims



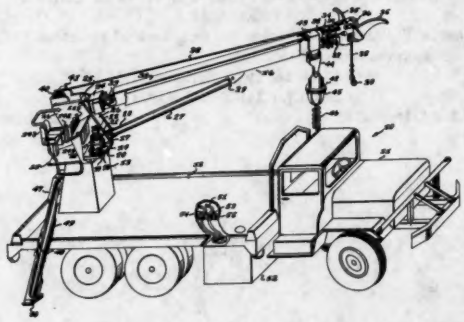
A mechanism for an angling and tilting dozer blade in which the dozer is provided with a blade supporting frame and the blade is universally pivotally connected to the front end of the frame within a vertical plane containing the longitudinal axis of the dozer; the opposite lower corners of the blade are pivotally connected by links to the blade supporting frame and the links are longitudinally slidably supported on the frame to thereby angularily reposition the blade when the links are actuated; an extendable link is provided positioned along the rear-side of the blade and towards one side of the blade from the blade center for pivotal connection of the blade to the front end of the frame to tilt the blade around an axis normal to the longitudinal axis of the dozer when the extendable link is actuated. Actuation of the links may be manual or by fluid power.

3,690,387

BOOM ROTATION BRAKE RELEASE MEANS FOR DERRICKS

William Jennings Dixon, Charlotte, N.C., assignor to R. H. Bouligny, Inc.

Filed Feb. 16, 1971, Ser. No. 115,675
Int. Cl. E21c *5/00*
U.S. Cl. 173—43 18 Claims



A derrick having boom rotation brake release means operable to allow the boom to be rotated by side loading above a predetermined magnitude and thereby relieve the extent of side loading so as to avoid damage to the derrick. The boom is rotated by a hydraulic motor with which is associated a double relief valve that allows reverse operation of the motor as an idler pump while imposing a limited resistance to rotation. The brake release means is hydraulically operated to release a brake mechanism that normally prevents boom rotation, with the brake release means being connected in the hydraulic system of the derrick for operation to release the brake mechanism in response to an increase in the hydraulic pressure in the system occurring during operation of the rotation motor and also during operation of other hydraulically operated derrick functions to allow the boom to rotate during operation of the rotation motor and to be rotated by side loading during operation of the other derrick functions, with the resistance of the rotation motor preventing rotation until a predetermined magnitude of side loading is imposed. Deac-

tuation of the rotation motor and all of the other derrick functions results in a pressure decrease that renders the brake release means inoperable to allow the brake mechanism to prevent further rotation of the boom when the derrick functions have been completed or at any time that it becomes necessary to stop boom rotation, e.g., to avoid damaging contact with an adjacent object.

3,690,388

INSTALLATION OF SAND DRAINS

Joseph Lawrence Hilton, Oakland, N.J.; Charles Russell Graff, Incline Village, Nev., and Lewis Fred Cavin, San Lorenzo, Calif., assignors to Raymond International Inc., New York, N.Y.

Filed July 20, 1970, Ser. No. 63,968

Int. Cl. E21b *11/00*; E02d *17/142*

U.S. Cl. 175—20 **1 Claim**

Methods and equipment for installing sand drains in water bearing earth; and an open ended tubular shell is lowered into the earth while allowing the water bearing earth to freely enter into the interior of the shell; a close fitting auger is used to remove the water bearing earth from the shell and then the shell is filled with sand and subsequently withdrawn from the earth thus leaving the sand to provide the desired sand drain.

3,690,389

METHOD AND AN APPARATUS FOR TAKING AN UNDISTURBED SOIL SAMPLE

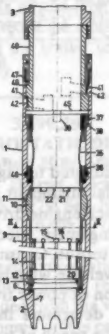
Roelof van de Beld; Heinrich K.S.P. Begemann; Hendrikus J. Bos, and Adriaan B. Mann, all of Laboratorium voor Grondmechanica, Stieltjesweg 2, Delft, Netherlands

Filed Feb. 2, 1970, Ser. No. 7,789

Claims priority, application Netherlands, Feb. 7, 1969, 6902019

Int. Cl. E21b *9/20, 25/00, 49/02*

U.S. Cl. 175—59 **29 Claims**



A method and an apparatus for taking an undisturbed soil sample are described, by means of which the soil sample, which, during the introduction of a sampling tube into the soil, is surrounded by a hose, is supported substantially over its full length by means of a supporting tube which, after removing the sampling tube from the soil, is also used for transporting the sample to a laboratory. This supporting tube may consist of separate tube selections connected together by adhesive tape, so that the sample may be divided in easily transportable sections by cutting the adhesive tape and the sample. For facilitating the penetration of the sample into the sampling tube, a lubricating liquid may be used, and the sample may be supported near the lower end of the sampling tube by means of a supporting liquid, both liquids being immiscible. The lower part of the sampling tube is provided with means for pinching off the sample, and the corresponding secton of the supporting tube is weakened so that it may be deformed correspondingly, said pinching means being provided with means for locking it in its extreme positions, and with means for transferring pressing and pulling forces. Means are provided for closing the upper end of the hose and for guiding this end coaxially with the supporting tube for allowing the lubricating liquid to be uniformly distributed around the hose.

3,690,390

THREADED JOINT TYPE CONNECTION FOR A DRILL IN A HAMMER DRILL

Franz Chromy, Gisingen, Austria, assignor to Hilti Aktiengesellschaft, Schaan, Furstenlum, Liechtenstein

Filed Nov. 28, 1969, Ser. No. 880,748

Claims priority, application Germany, Dec. 2, 1968, P 18 12 229.7

Int. Cl. E21b *9/16, 17/042*

U.S. Cl. 175—388 **7 Claims**

In a hammer drill a threaded joint type engagement is provided between the drill and the drill socket. Preferably, the drill is threaded into the drill socket and the threaded engagement is continuously tightened and loosened during operation and can be easily disassembled for replacement of the drill. The drill is arranged in the socket so that the impact energy from the hammer drill is transmitted without affecting the interengaged connection of the parts.

3,690,391

APPARATUS AND METHOD FOR INCREMENTAL BATCH WEIGHING

William Rust, Sale, England, assignor to Simon Handling Engineers Limited, Stockport, England

Filed April 22, 1971, Ser. No. 136,528

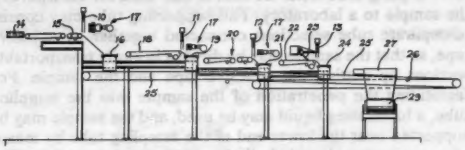
Claims priority, application Great Britain, May 2, 1970, 21,200/70

Int. Cl. G01g *13/04, 15/02, 17/00*

U.S. Cl. 177—1 **10 Claims**

A method of automatically preparing consecutive batches, each of predetermined weight, of material from large undivided masses of such material, comprising the steps of progressing the material through a plurality of stations at each of which pieces of approximately equal size and hence of ap-

proximately equal weight are cut from same, each succeeding station cutting smaller pieces than the preceding station, and



assembling each batch by selecting and collecting the required numbers of pieces from each of said stations to achieve said predetermined weight.

3,690,392

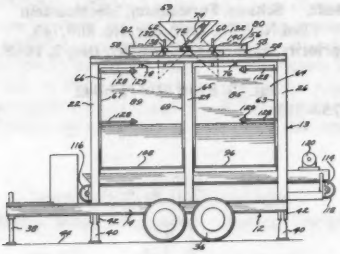
CONTINUOUS FLOW SCALE WITH PRELIMINARY VOLUMETRIC MEASUREMENT

James M. Smith, Golden, Colo., assignor to The Great Western Sugar Company, Denver, Colo.

Filed Feb. 24, 1970, Ser. No. 14,264

Int. Cl. G01g *13/16*

U.S. Cl. 177—59 **4 Claims**



Weighing feeder type apparatus which comprises two containers from one of which material is discharged while the other is charged and automatic control means responsive to the charging of a predetermined volume of material to cause the charging action to be shifted from it to the now empty container and to discharge the filled one.

3,690,393

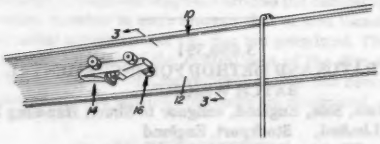
MAGNETIC WHEEL

William K. Guy, Sunrise Golf Village, Fla., assignor to Donna Kramer, Plantation, Fla.

Filed March 19, 1971, Ser. No. 125,929

Int. Cl. B60b *39/00*; B60l *11/00*

U.S. Cl. 180—1 **12 Claims**



A magnetic wheel having axial end faces oppositely polarized magnetically, is maintained thereby in rolling contact with a magnetic flux conducting path. The wheel when driven propels a vehicle frame along the path without reliance on traction. Rolling contact is maintained by the magnetic field established by the flux extending between the end faces through the surface of the path producing contact holding forces acting on the non-polarized rim of the wheel.

3,690,394

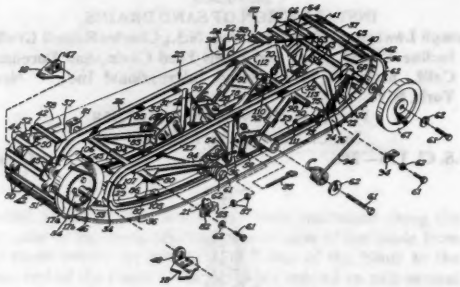
SHOCK MOUNTED SUSPENSION SYSTEM

Roger H. Skime, Thief River Falls, Minn., assignor to Arctic Enterprises, Inc., Thief River Falls, Minn.

Filed June 15, 1970, Ser. No. 46,065

Int. Cl. B62m *27/02*

U.S. Cl. 180—5 R **2 Claims**



A slide rail snowmobile tread drive suspension system is disclosed which incorporates a shock absorber between the stems of the variable length lever arms which support the body frame apart from the slide rail frame. Individually adjustable spring biasing is provided to compensate for varying snow conditions.

3,690,395

MOTOR VEHICLE WITH TWO DRIVING UNITS ESPECIALLY FOR AGRICULTURAL PURPOSES

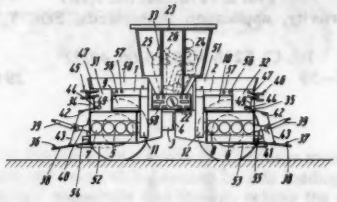
Richard Spiller, Bensberg; Gottfried Moser, Bergisch-Gladbach, and Walter Berthold, Schildgen, all of Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne-Deutz, Germany

Filed July 18, 1969, Ser. No. 843,104

Claims priority, application Germany, July 27, 1968, P 17 80 052.1

Int. Cl. B62d *49/40*; B60k *17/10*

U.S. Cl. 180—6.48 **34 Claims**



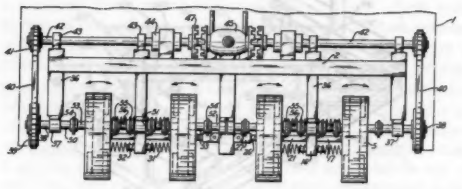
A vehicle, especially adapted for agricultural use, and having two engines in coaxial alignment in a frame and adapted for coupling together. Each engine drives the primary part of a torque transmitting arrangement, electrical or hydraulic, and secondary parts of the torque transmitting arrangement are connected to drive the vehicle wheels. Controls are provided to control the distribution of power from the primary parts to the secondary parts to determine the wheel, or wheels, to receive the power and the speed of rotation of the wheels. At both ends of the vehicle there are provided means for connection of implements to the vehicle and including lift type hitches and power take-off shafts.

3,690,396

FOUR-TRACK VEHICLE

Samuel R. Colosimo, 2304 Perricrest Dr., Pittsburgh, Pa.

Filed Jan. 28, 1971, Ser. No. 110,470
Int. Cl. B62d 55/10
U.S. Cl. 180—9.2 R 5 Claims



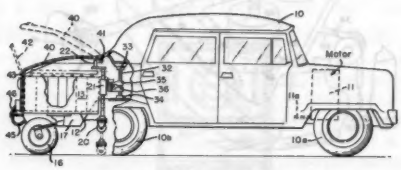
A vehicle is provided with four laterally spaced track units, each of which includes a travelling endless track. Above the track units there is a chassis floor, from which laterally spaced rigid members extend down between the track units. Means are provided for connecting the track units to these rigid members beside them to support the floor. Such means, which include horizontal pivots, are constructed and arranged to allow the track units to tilt laterally. The drive shafts for the endless tracks are so constructed as not to interfere with tilting of the track units. At the back of the vehicle, readily accessible means are provided for taking up slack in the endless tracks.

3,690,397

ELECTRIC AUTOMOBILE

Louis W. Parker, 2408 Sunrise Key Blvd., Ft. Lauderdale, Fla.

Continuation-in-part of Ser. No. 834,358, June 18, 1969, abandoned. This application Dec. 16, 1970, Ser. No. 98,721
Int. Cl. B60k 1/09; B50l 11/18
U.S. Cl. 180—65 R 15 Claims



An electrically propelled automobile is provided with a detachable wheeled trailer unit housed entirely within the confines of the automobile body and carrying battery units for energizing the automobile motor. The trailer unit is provided with its own motor adapted to be energized from said battery units, for self-propelling the trailer unit when it is detached from the automobile body.

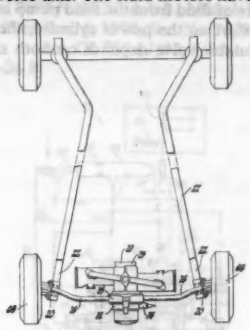
3,690,398

HYDROSTATIC DRIVE

Gilbert K. Hause, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 5, 1970, Ser. No. 77,941
Int. Cl. B60k 17/10
U.S. Cl. 180—66 R 2 Claims

A vehicle suspension and hydrostatic drive system in which the driving engine, the fluid pump, the fluid motors and the driven wheels are suspended from the vehicle frame as a unitary package. The engine pump unit is connected to each motor unit by a truss having the upper and lower horizontal truss members formed by rigid fluid conduits and the end truss members formed by the pump and motor housings and intermediate diagonal truss members. The trusses are bowed so the center of weight of the engine pump unit and each motor unit are on a transverse axis. The fluid motors have a central spindle providing rotary support for the driven wheels. Single needle bearings located between each motor housing and the driven wheel provide thrust or axial support for the wheels.

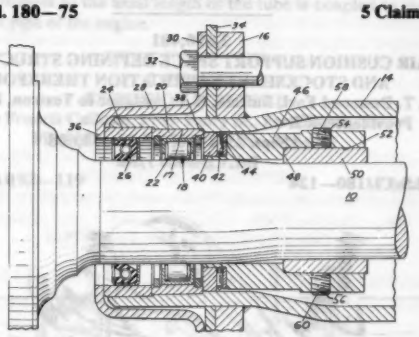


3,690,399

AXLE ASSEMBLY FOR AN AUTOMOTIVE VEHICLE

Ronald D. Bokovoy, Bloomfield Hills, and Roy G. Luvisotto, Warren, both of Mich., assignors to Boise Cascade Corporation, Boise, Idaho

Filed Jan. 25, 1971, Ser. No. 109,154
Int. Cl. B60b 35/12
U.S. Cl. 180—75 5 Claims



An axle shaft construction for an automotive vehicle having a drive shaft, two transversely disposed drive axles, differential gearing connecting the drive shaft to the inboard ends of the axles to establish a split torque delivery path and thrust bearings and bearing retainer means situated at each outboard end of the axle housing for establishing a thrust force reaction point and for retaining the axle shafts in assembled relationship, provision being made for establishing a desired adjustment of each axle with respect to its outboard thrust bearing and for effecting the desired spacing of the inboard ends of the axles.

3,690,400

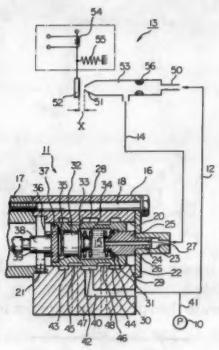
VEHICLE POWER STEERING CONTROL DEVICE

Hiromichi Uchiyama, Tokyo, and Naohiko Inoue, Yokohama, both of Japan, assignors to Nissan Motor Company, Ltd., Kanogawa-ku, Yokohama, Japan

Filed May 11, 1971, Ser. No. 142,201
Claims priority, application Japan, June 1, 1970, 45/46597; June 1, 1970, 45/46598; Aug. 11, 1970, 45/69837
Int. Cl. B62d 5/08
U.S. Cl. 180—79.2 R 7 Claims

A vehicle power steering control device including a reaction assembly which applies a reaction force on the steering wheel that depends on both steering effort and vehicle speed. The device comprises a vehicle speed responsive modulator valve

for controlling or modulating a pressure of fluid from a fluid pump in response to a signal from a vehicle speed sensor. Since the pressure of fluid from the fluid pump is proportional to the steering effort on the power cylinder, the output pressure of the modulator valve depends on both steering effort



and vehicle speed and is transmitted into a reaction chamber. Thus, for low vehicle speeds, the driver encounters a small resistance in turning the steering wheel and, on the other hand, for high vehicle speeds, a large turning resistance is provided to avoid the danger of too rapid turning of the steering wheel and the road wheels

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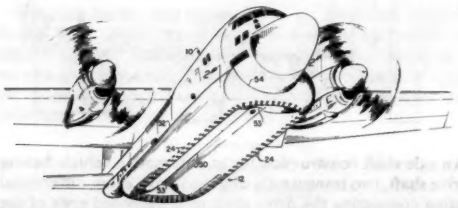
3,690,401

AIR CUSHION SUPPORT SPACE DEFINING STRUCTURE AND STOCKSHEET FABRICATION THEREFOR

I. T. Desmond Earl, Buffalo, N.Y., assignor to Textron, Inc., Providence, R.I.

Filed Sept. 25, 1970, Ser. No. 75,608
Int. Cl. B60v *1/16*
U.S. Cl. 180—124 9 Claims



An improved base support or "undercarriage" of the inflatable trunk type for attachment to a machine such as an airplane, air cushion vehicle, or the like, so as to render the machine supportable by means of an air film relative to a reaction surface. The trunk structure comprises a novel, elastic (within different limitations in different directions) sheet fabrication, which is patterned to incorporate within various areas of the sheet fabrication specifically prescribed elasticity characteristics (but only within prescribed limits); either omni-directionally or bi-directionally or uni-directionally, within the plane of the sheet, as dictated by the functional prerequisites of the system.

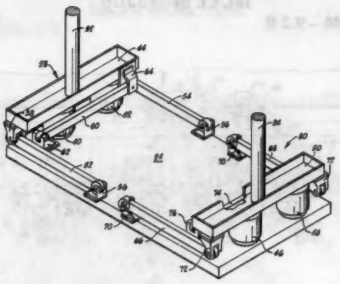
3,690,402

VIBRATOR STABILIZATION SYSTEM

Jay H. Stafford, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Aug. 22, 1969, Ser. No. 852,277
Int. Cl. G01v *1/04*
U.S. Cl. 181—.5 VM 9 Claims

Apparatus for providing stabilization of a geophysical vibrator in the horizontal plane. The apparatus is adapted for use with geophysical vibrational energy sources of the type which transmit through an energy coupling baseplate into the earth, such as a baseplate being forced into a coupling by bearing a part of the weight of a support vehicle thereupon. The ap-



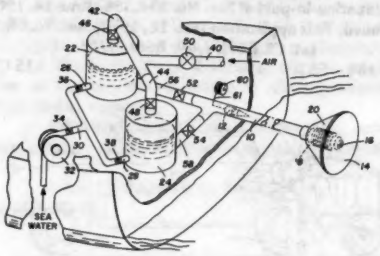
paratus provides a plurality of radius rods between the base plate and vertical support structure and extending in both the transverse and longitudinal directions to restrain movement of the support structure in the horizontal plane without noticeable interference to the vertical attitude of vibration.

3,690,403

ACOUSTIC ENERGY SOURCE UTILIZING THE WATER-HAMMER PHENOMENON

Billy W. Davis, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 2, 1970, Ser. No. 147
Int. Cl. G01v *1/14*
U.S. Cl. 181—.5 H 26 Claims



An elongated pipe is connected at an upper end to a pressurized fluid container and extends downwardly into water at the lower end. A valve is connected between the pressurized fluid container and the elongated pipe. A piston member is slidable within the elongated pipe. A diaphragm is connected at the submerged end of the pipe and includes seating structure for engaging the piston member. When the valve is opened, a high energy supply of fluid is directed against the piston member to force the piston member at high speed down the pipe into abutment with the seating structure. Compressional waves are thus created along the length of the elongated pipe, the diaphragm coupling the compressional waves into the adjacent water to create acoustic energy for use in marine exploration.

3,690,404

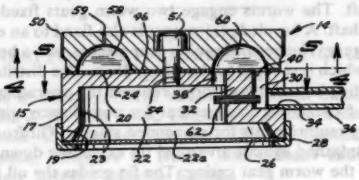
SELECTIVE FREQUENCY STETHOSCOPE STRUCTURE

Ronald J. Collins, Golden Valley, Minn., assignor to Bio Data, Inc., Minneapolis, Minn.

Filed July 30, 1971, Ser. No. 167,680
Int. Cl. A61b 7/02
U.S. Cl. 181—24 6 Claims

A selective frequency range stethoscope consisting of a housing embodying a sound producing chamber, a sound con-

ducting chamber or channel and a rotatable backing plate having passages both formed therein and operatively associated therewith for the selective passage of a frequency range of sound between said chambers. One of said passages is



particularly adapted to pass a predominantly low frequency range of sound, one of said passages is adapted to pass a predominantly high frequency range of sound and one of said passages is adapted to pass a full range of sound.

3,690,405

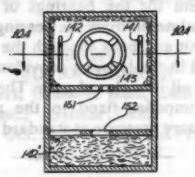
LOUDSPEAKER SYSTEM HAVING BASS RESPONSE RANGE BELOW SYSTEM RESONANCE

Edwin A. Hance, 3920 Foothill Rd., Santa Barbara, Calif.

Continuation of Ser. No. 744,574, July 12, 1968, abandoned, which is a continuation-in-part of Ser. No. 520,277, Jan. 12, 1966, abandoned. This application Feb. 24, 1971, Ser. No. 118,482

Int. Cl. G10k *13/00*; H04r *1/28*

U.S. Cl. 181—31 B **22 Claims**



The subject patent application is concerned with improvements over prior art systems relative to the processing of the speaker back-wave by acoustic networks that include a part, and the use of the back-wave to produce supporting port radiation in a frequency band below the basic resonance frequency of the system.

The structure includes essentially a pair of acoustic cavities, coupled by an aperture. The speaker is mounted in the first cavity. The second cavity may be subdivided and may include damping. A port aperture is included in one of the cavities. The improvements involve relationships between acoustic elements of inertance, capacitance and resistance that result in in-phase port radiation; and in relationships whereby smooth response is obtained while maintaining and improving the phase of port radiation relative to that of the speaker front-wave in the frequency region below system resonance.

The present invention concerns only the bass and lower midrange frequencies, and is intended for operation with 6 db/octave amplifier equalization in the bass range.

3,690,406

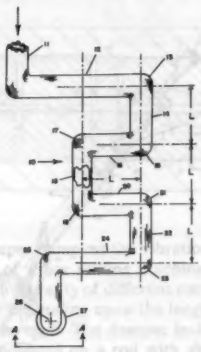
EXHAUST NOISE SILENCER

Leopold Weiss, 2830 N.W. 23rd Ave., Miami, Fla.

Filed Dec. 4, 1970, Ser. No. 95,132

Int. Cl. F01n *1/08, 7/08*

U.S. Cl. 181—36 B **2 Claims**



An exhaust noise silencer for use on a combustion engine or the like in which an open tube having a plurality of equilength segments disposed perpendicular to adjacent segments in a series in respect to the axial length of the tube is coupled to the exhaust pipe of the engine.

3,690,407

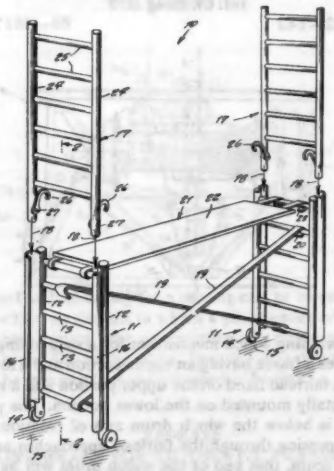
EXTENSION SCAFFOLD

Eugene Francis Cullison, 5709 Yeary St., Fort Worth, Tex.

Filed March 15, 1971, Ser. No. 124,285

Int. Cl. E04g *1/14*

U.S. Cl. 182—119 **1 Claim**



A portable scaffold which is extendable in height as well as length, the device being comprised of a pair of base ladder units held in upright vertical position by means of criss-crossing braces and a horizontal platform across the upper ends, and each of the base ladder units being adaptable for supporting thereon an extension at an adjustable elevation, and the horizontal platform in one form of the invention being telescopic in length.

3,690,408

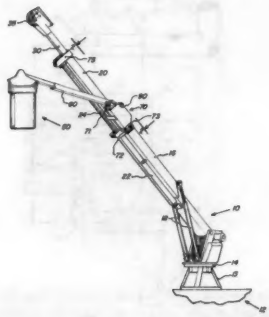
ROTATABLE AND EXTENSIBLE ELBOW

Albert E. Reske, Minneapolis, and Orlo J. Johnson, Lakeville, both of Mich., assignors to Tel-E-Lect, Inc., South Minneapolis, Mich.

Continuation-in-part of Ser. No. 3,944, Jan. 19, 1970. This application May 8, 1970, Ser. No. 35,849

Int. Cl. B66f *1/04*

U.S. Cl. 182—141 **11 Claims**



A mobile aerial tower comprised of a mobile platform having a boom with an extensible section and a personnel-carrying platform or bucket mounted on an auxiliary elbow section which is pivoted on a bracket through various types of motive means and with the provisions for mounting the bracket selectively at either the end of the main boom section or the extensible portion of the same. The elbow section is also extendable to vary the length of the same.

3,690,409

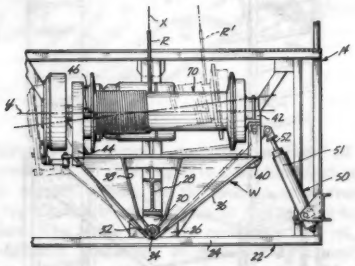
LEVEL WINDING WINCH MECHANISM AND HEAVY-DUTY DRIVE THEREFOR

Albert Brauss, Redmond, Wash., assignor to Spider Staging, Inc., Seattle, Wash.

Filed Oct. 21, 1968, Ser. No. 769,326

Int. Cl. E04g *1/18*

U.S. Cl. 182—142 **7 Claims**



A level winding winch mechanism for a suspending staging that includes a frame having an upper portion and a lower portion with a fairlead fixed on the upper portion and a rotatable winch pivotally mounted on the lower portion. The pivot for the winch is below the winch drum axis of rotation. As the wire rope passing through the fairlead approaches an end of the winch drum, that end of the winch drum will be pivoted toward an imaginary vertical perpendicular line between the fairlead and the winch drum. Thus the angle between the wire rope, as it approaches an end of the drum, and the imaginary perpendicular line is kept to a minimum, the effect of which is to maintain the "fleet angle" at approximately 90°. Also the pivot is remotely spaced from the winch drum axis of rotation to reduce the angle through which the winch drum must pivot and thus allow the use of winch drums of long lengths which would otherwise strike the frame of the staging when pivoted.

A pivot control using a primary spring and a secondary spring energized only after the wire rope reaches a predetermined point on the winch drum is provided to counteract the increase in leverage when an extra long winch drum is used.

A low temperature-high capacity drive arrangement for a winch on a suspended staging. A pair of worms are driven through spur gears from a common pinion spur gear on a motor shaft. The worms engage two worm gears fixed on a common shaft. A beveled pinion gear is also fixed to an end of the worm gear. The beveled pinion gear meshes with a beveled ring gear which is secured to the winch drum. The distribution of the loading between the worms reduces the operating temperature of the drive arrangement for compliance with the rigid safety requirements for suspended staging. Oil from the worms is splashed against a vertical fin extending down from the top of the worm gear casing. The fin guides the oil into a trough through the walls between the spur and worm gear casing for lubricating the driven spur gears.

3,690,410

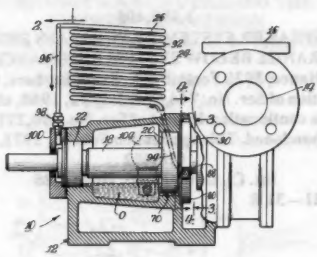
COOLING AND LUBRICATING SYSTEM FOR BEARINGS

Leonard J. Sieghartner, Coal Valley, Ill., assignor to Roy E. Roth Company, Rock Island, Ill.

Filed Dec. 17, 1970, Ser. No. 99,060

Int. Cl. F16n *7/40, 39/02*

U.S. Cl. 184—6.28 **5 Claims**



A cooling system for the bearings of a rotary machine designed to recirculate oil from the bearing housing through a heat exchanger unit and back through the bearings. A pumping unit contained in the housing provides sufficient pressure to recirculate the oil in a closed path. The pumping unit employs a turbine impeller fixed to the machine's shaft to develop the necessary pressure at standard motor speeds.

3,690,411

DEVICE FOR SELF-SERVICE STORES

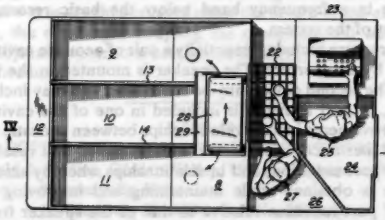
Werner Potrafke, Hufersenstr. 6, 432 Hattingen, Germany

Filed Dec. 10, 1970, Ser. No. 96,898

Claims priority, application Germany, Dec. 12, 1969, P 19 62 319.9

Int. Cl. E04h *3/04*

U.S. Cl. 186—1 A **2 Claims**



An arrangement for self-service stores, especially for use in connection with shopping baskets and shopping carts, in

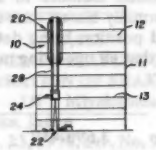
which goods selected by a customer for purchase are checked out by a cashier and conveyed to one of preferably three withdrawal compartments through the intervention of either endless conveyor belt and an inclined slide table or through the latter only, depending on which withdrawal compartment is selected by the cashier for receiving the goods purchased by the customer.

3,690,412

HOIST FOR MULTI-STORIED BUILDINGS UNDER CONSTRUCTION

Donald R. Murray, North Vancouver, British Columbia; Cornelius J. M. Van Soest, Coquitlam, British Columbia, and Donald C. Moulson, Burnaby, British Columbia, all of Canada, assignors to Heede International Ltd., Vancouver, British Columbia, Canada

Filed Oct. 2, 1970, Ser. No. 77,629
Int. Cl. B66b 9/00
U.S. Cl. 187—2 13 Claims



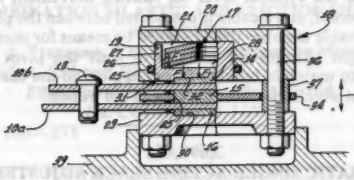
A hoist having a support structure to be releasably secured to the building frame and having raising means for lifting it relative to the building frame. A hoisting cable extends between the support structure and a base positioned therebeneath at ground level. A lift unit is raised and lowered by the hoist cable, rides on the latter between the base and the support structure, enters the support structure and is guided thereby during the upper part of its course of travel. If the hoist is used for moving concrete, the lift unit includes a bucket which tips into a hopper at the support structure.

3,690,413

MOTION DAMPER

Franklin B. Airheart, Granada Hills, Calif., assignor to Airheart Products, Inc., Sylmar, Calif.

Filed Oct. 5, 1970, Ser. No. 77,942
Int. Cl. F16f 7/08
U.S. Cl. 188—1 B 10 Claims



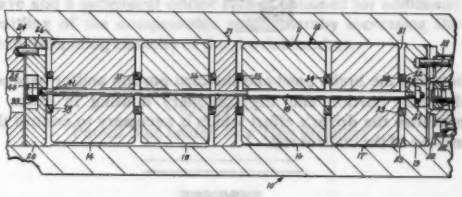
A two-stage motion damper comprises:
(a) a member movable in opposite directions,
(b) friction means engaging a side of said member to develop damping force restraining said movement,
(c) yieldable means transmitting force urging said friction means into engagement with said member, and
(d) a fluid pressure responsive actuator operable at selected times to develop additional force acting to urge said friction means relatively into engagement with said member.

3,690,414

VIBRATION ABSORBER FOR A SUPPORTED MEMBER

Trilok C. Aggarwal, Cincinnati, and John R. Hasz, Milford, both of Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Nov. 4, 1970, Ser. No. 86,727
Int. Cl. F16f 7/08
U.S. Cl. 188—1 B 10 Claims



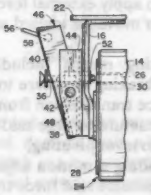
A series of damper dampens the vibrations in a bar extending from a quill of a bar milling machine with the damper damping each of a plurality of different natural frequencies of the extending bar depending upon the length of the extension of the bar from the quill. The damper includes a plurality of damper masses mounted on a rod with viscoelastic material between each of the adjacent damper masses and also between the supports for the rod and the adjacent damper masses. By selecting the weights of the masses and their locations on the rod, the length and diameter of the rod, and the stiffness of the viscoelastic material, the damper is designed to cover a wide frequency range, i.e., bar extension. The damper need not be tuned for each bar extension each time that the bar has a different extension since the plurality of damper masses permits the damper to dampen vibrations anywhere within the designed frequency range.

3,690,415

WHEEL LOCK ASSEMBLY

Robert A. Nordskog, Tarzana, Calif., assignor to Nordskog Company, Inc., Van Nuys, Calif.

Filed Nov. 4, 1970, Ser. No. 86,786
Int. Cl. B60t 1/02
U.S. Cl. 188—69 10 Claims



A wheel lock assembly for a serving cart to be normally employed within an aircraft in which a pin is under constant bias toward cooperation with an aperture of a group of apertures located in the hub of the wheel, the pin being movable against the bias by means of a manually operated actuator.

3,690,416

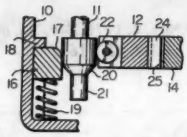
PARKING BRAKE FOR AUTOMATIC TRANSMISSION

Katsuo Yamada, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed July 17, 1970, Ser. No. 55,670
Int. Cl. B60t 1/02
U.S. Cl. 188—69 26 Claims

A parking brake for use with an automatic power transmission mechanism including a parking gear which is engaged or disengaged by a brake pawl upon manual shifting motion of a control rod. A cam portion is carried by the control rod and is

moved to cause the brake pawl to engage and disengage in the parking position with a stationary housing. Intermediate members such as rollers or balls are situated in a spaced defined



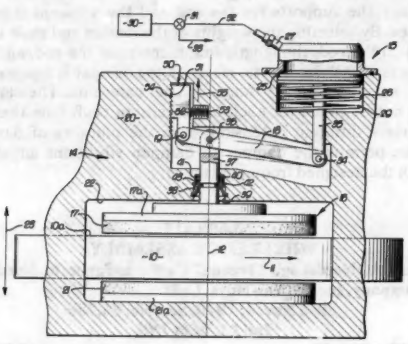
between the brake pawl and the cam portion and/or between the cam portion and the stationary housing in order to minimize the driver's effort which is necessary to control the motion of the control rod.

3,690,417

WEAR COMPENSATED, FORCE MULTIPLYING DISC BRAKE

Franklin B. Airheart, Los Angeles, Calif., assignor to Airheart Products, Incorporated, Sylmar, Calif.

Filed Jan. 28, 1971, Ser. No. 110,384
Int. Cl. F16d *55/02*
U.S. Cl. 188—71.8 **29 Claims**



A disc brake assembly includes, in combination:

a. actuator means to apply external force,

b. braking structure movable toward and away from a side of the disc, and

c. force transmitting means including a lever having coupling to said braking structure to provide mechanical advantage of force transmission from the actuator means to the braking structure to urge said structure against the disc in response to lever pivoting,

d. said means including a motion adjustor for shifting said coupling to compensate said force transmitting means for wear of the braking structure.

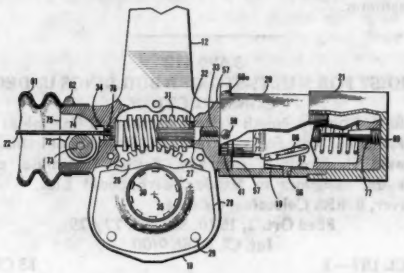
3,690,418

ENCLOSED AUTOMATIC SLACK ADJUSTER FOR VEHICLE SHOE BRAKES

Lloyd Raymond Devitt, 30 Plymouth St., St. Catherines, Ontario, and Gordon Marvin Devitt, Allanport Rd., Allanburg, Ontario, both of Canada

Filed April 21, 1971, Ser. No. 136,034
Int. Cl. F16d *65/56*
U.S. Cl. 188—79.5 K **5 Claims**

The specification discloses an automatic slack adjuster all moving parts of which are enclosed for connecting a brake rod to an actuating cam shaft for a shoe brake in which the adjuster body is mounted on the actuating camshaft by a worm gear rotatable within the body. A worm shaft which on rotation positions said worm gear in the body extends exteriorly thereof to mount a first ratchet part fixed to the shaft and a second ratchet part rotatable thereon. A fixed housing extending from the body and about the worm shaft accommodates an axially slidable actuating member which develops relative rotational motion between the fixed housing and the second ratchet part when moved from an inner to an outer position or



from an outer to an inner position. The actuating member is connected by a tension member to a fixed abutment or anchorage but is normally biased outwardly by a spring, the limit of the outward position being determined by a sealing cap in such manner that all operating mechanism and moving parts are enclosed.

3,690,419

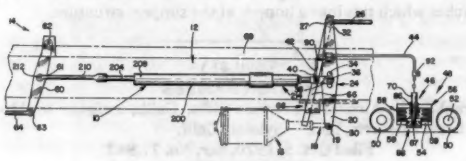
Patent Not Issued For This Number

3,690,420

EMPTY LOAD DEVICE FOR RAILROAD CARS

Eldred H. Natschke, Bourbonnias, Ill., assignor to Universal Railway Devices Company

Filed Oct. 15, 1970, Ser. No. 81,028
Int. Cl. B60t *8/18*
U.S. Cl. 188—195 **3 Claims**



An empty load device for railroad cars in which the fulcrum employed to transmit braking forces to the car trunk, for instance, the brake rigging cylinder lever pivot pin, is mounted relative to the cylinder lever for shifting movement longitudinally thereof, and a cable is connected between the pivot pin and a movable member that is moved by means for sensing the load weight changes on the car to shift the pivot pin as required to maintain braking forces applied to the car wheels below that which will cause locking of the wheels.

3,690,421

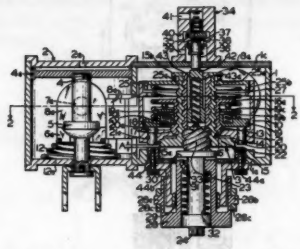
AUTOMATIC SINGLE-ACTING SLACK ADJUSTER FOR BRAKE ROD LINKAGE

Josef Frania, Hannover, and Erhard Lehnert, Dollbergen, Kries Burgdorf, both of Germany, assignors to Westinghouse Bremsen-und Apparatebau G.m.b.H., Hannover, Germany

Filed April 8, 1971, Ser. No. 132,363
Claims priority, application Germany, May 30, 1970, P 20 26 543.4
Int. Cl. F16d *65/56*
U.S. Cl. 188—203 **11 Claims**

The invention concerns itself with an automatically operative and simple operating slack adjuster arrangement for

brake rigging for vehicles, especially railway vehicles. It consists of a tubular-shaped body that is axially guided in a fixed housing and in comparison to this cannot be rotated. The tubular body supports thereon two conical clutch surfaces by



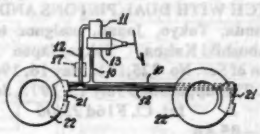
which, through the means of the aid nut and the clutch nut, the brake as well as respectively the release travel as well as in working conjunction with the contact that is arranged in the fixed housing, the slack adjusting is transferred to the coaxially unrotatable threaded spindle.

3,690,422

METHOD AND APPARATUS TO DELAY DETERIORATION OF BRAKE OIL

Akio Hayama, No. 1/7 Miyakojima-Hondori-5-chome, Miyakojima-ku, Osaka, Japan

Filed Nov. 23, 1970, Ser. No. 91,752
Int. Cl. F16d 65/78
U.S. Cl. 188—264 D 10 Claims



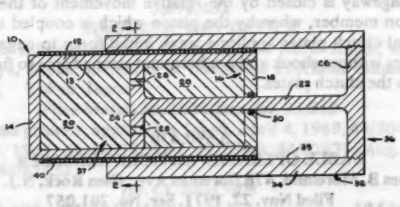
A method and apparatus for controlling the liquidity of brake actuation liquid and to delay deterioration of its original properties by means of operating one or more, opening and closing elements in response to actuation and release of the brake pedal at an appropriate place adjacent to a liquid pressure cylinder of a liquid pressure brake which brakes a rotating part of a wheel, and forcing the brake actuation liquid having been heated in said liquid pressure cylinder to flow back to a storage tank through a discharging part of the opening and closing element immediately when the fluid pressure induced into the liquid pressure cylinder is released.

3,690,423

COMBINATION SILASTIC AND FRICTION SHOCK ABSORBER

William J. Trongeau, Chicago, Ill., assignor to Miner Enterprises, Inc., Chicago, Ill.

Filed March 31, 1971, Ser. No. 129,704
Int. Cl. F16f 9/30, 11/00
U.S. Cl. 188—271 6 Claims



A friction shock absorber having a thin wall cylinder filled with compressible solid, an outer sleeve fitted over and slidably engaging the thin wall cylinder, with the wall thickness of the outer sleeve being approximately three times greater than the wall thickness of the thin wall cylinder, and a piston rod extending into the thin walled cylinder having a piston head in engagement with the inner surface of the cylinder, with the piston head being provided with a multiplicity of axially disposed orifices. When subject to relatively high impact forces, the wall of the cylinder expands radially into tighter frictional engagement with the wall of the outer sleeve and a peripheral orifice is thus obtained for additional throttling of the compressible solid, thereby increasing the shock dissipating capacity of the shock absorber.

3,690,424

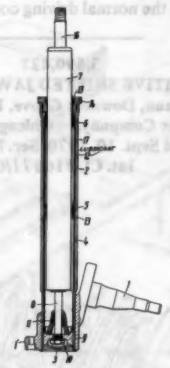
Patent Not Issued For This Number

3,690,425

HYDRAULICALLY DAMPED VEHICLE SUSPENSION DEVICE

Jean Herbert Willich, Am Hohlweg 17, Ennepetal-Altenvoerde, Germany; Walter Bruninghaus, deceased, late of Ennepetal-Voerde, Germany, and Gisela Bruninghaus, administratrix, Lober Str. 134, 2828 Ennepetal-Voerde, Germany

Filed Sept. 10, 1970, Ser. No. 71,085
Claims priority, application Germany, Sept. 10, 1969, P 19 45 674.7
Int. Cl. F16f 9/54
U.S. Cl. 188—321 8 Claims



A hydraulically damped vehicular suspension device comprises a self-contained damper unit which incorporates a shock absorber and which can be easily fitted into a pipe carrying a wheel-axle journal at its lower end. In order to replace the damper unit in the outer pipe it is only necessary to unscrew a lock nut and uncouple the damping cylinder of the inserted unit from the vehicle chassis. The device may also include means for cooling the damping cylinder in use.

3,690,426

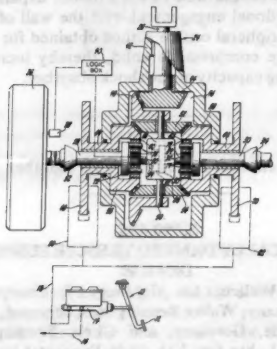
WHEEL LOCK CONTROL DIFFERENTIAL

Thomas W. Weisgerber, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 27, 1971, Ser. No. 173,504
Int. Cl. B60k 29/02; F16d 55/22
U.S. Cl. 192—4 A 9 Claims

A differential unit has ring gears formed on the inner diameters of the side gears, which are connected to inboard discs for vehicle braking. Planetary gears in the ring gears are rotatably mounted on carriers which transmit power to the axle shafts. The planetary gears also mesh with sun gears which are fastened to a modulator pump shaft. The modulator pump

housing is a part of the differential pinion gear axle. The pump includes an integral by-pass valve which is normally closed so as to hydraulically lock the pump. The valve is controlled through a wheel sensor and a logic box which may be of the type of wheel lock control currently in production on several automotive vehicles. During normal operation, the differential acts in the same manner as the usual differential. During braking, the brake torque is carried by the pump. When an incipient wheel lock condition is approached, the pump by-pass valve is opened. The pump is no longer hydraulically locked and therefore allows the sun gears to rotate. This also permits the planetary gears, the carrier axle shafts and the wheels connected thereto to rotate. When the valve is again closed, the system returns to the normal driving condition.



3,690,427

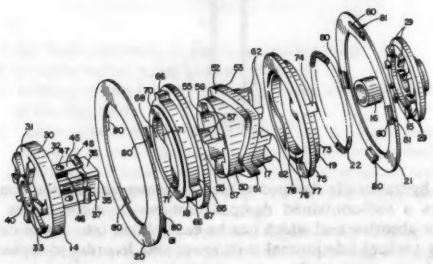
POSITIVE SHIFTED JAW CLUTCH

Arnold Zimmerman, Downers Grove, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Sept. 10, 1970, Ser. No. 71,168

Int. Cl. F16d *11/04*

U.S. Cl. 192—24 **11 Claims**



A positive drive clutch capable of being power shifted into a coupled and uncoupled operating mode by included shifting components which move relative to other clutch members only during the event of engagement and disengagement of the clutch.

3,690,428

VISCOUS FLUID CLUTCH

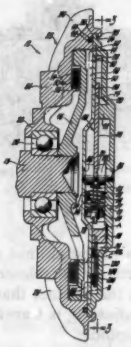
Frank E. LaFlame, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 28, 1970, Ser. No. 101,963

Int. Cl. F16d *31/00, 43/06*

U.S. Cl. 192—58 B **5 Claims**

A viscous fluid clutch including relatively rotatable first and second drive members having a fluid shear space therebetween and which are cooperable with a fluid medium in the shear space to provide a shear-type fluid drive therebetween, an annular reservoir for at times storing the fluid medium, speed-responsive valve means for permitting the flow of the fluid medium from the annular reservoir to the fluid shear space at an intermediate range of engine speeds and for preventing flow therebetween at all lower and higher engine speeds.



3,690,429

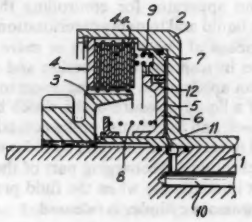
CLUTCH WITH DUAL PISTONS AND SPRINGS

Soichiro Honda, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 825,181, May 16, 1969, Pat. No. 3,612,237. This application July 15, 1971, Ser. No. 162,798

Int. Cl. F16d *25/00*

U.S. Cl. 192—85 AA **3 Claims**



A fluid pressure-operated friction clutch is provided with a piston operating within a pressure chamber and constituted by two piston members having respective return springs of different strengths so that the pressure chamber can be opened to the atmosphere through a small escape passageway by the advance movement of one piston member whereafter the passageway is closed by the relative movement of the other piston member, whereby the piston which is coupled to frictional clutch plates applies a weak initial force to engage the plates without shock and a subsequent strong force to fully engage the clutch plates.

3,690,430

CABLE OPERATED ARTICLE RELEASER

James B. Moreland, 476 Doremus Ave., Glen Rock, N.J.

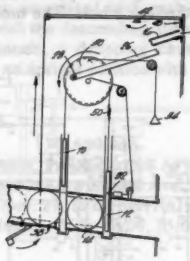
Filed Nov. 22, 1971, Ser. No. 201,057

Int. Cl. G07f *5/08*

U.S. Cl. 194—94 **6 Claims**

A coin operated automatic dispenser of cans, one at a time,

wherein a wheel rotated or counter rotated by weights of coins



or counter wieghts controls the positions of inner and outer gates to release cans one at a time.

3,690,431

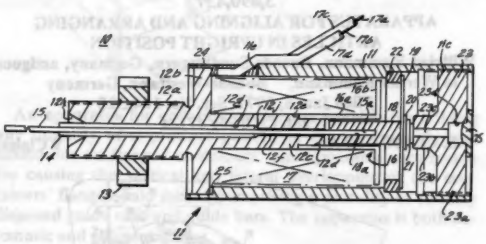
PRINT HEAD ASSEMBLY CONTAINING SOLENOIDS

Robert Howard, Roslyn, N.Y., assignor to Centronics Data Computer Corp., Hudson, N.Y.

Continuation-in-part of Ser. No. 37,815, May 15, 1970, abandoned. This application June 14, 1971, Ser. No. 152,598

Int. Cl. B41j *3/10*

U.S. Cl. 197—1 R **6 Claims**



A solenoid for actuating a print wire normally biased against the impact direction by "wagon wheel" spring means. Energization of the solenoid coil rapidly moves the print wire in the impact direction against the bias of the spring. Release of the energy supplied to the solenoid coil causes very rapid return of the print wire to the non-printing position. The "wagon wheel" spring structure, which undergoes both bending and twisting in a predetermined sequence, allows for rapid initial acceleration of the print wire in the impact direction while providing for rapid return of the print wire to the non-print position while significantly reducing "bouncing" or "overshooting".

The components of the solenoid are so designed as to greatly simplify and facilitate assembly while providing highly precise adjustment of the solenoid assembly through the use of components whose tolerances need not be tightly controlled.

3,690,432

MAGNETIC KEY DEVICE

Sigehito Kikuchi; Hiroshi Takeuchi, and Norio Aman, all of Tokyo, Japan, assignors to Nakagima Precision Industries Ltd., Tokyo, Japan

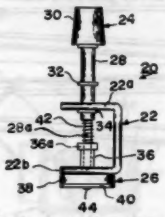
Filed March 30, 1970, Ser. No. 23,865

Claims priority, application Japan, April 4, 1969, 44/30473; June 6, 1969, 44/44378; Aug. 29, 1969, 44/82831; Aug. 29, 1969, 44/82832

Int. Cl. B41j *5/08*

U.S. Cl. 197—98 **10 Claims**

A key device for business machines and the like is provided which increases linearly the load smoothly when the key button or knob is depressed and can give a snap action, irrespective of the magnitude of force applied to the key device. The key device comprises a drive member slidably fixed to a retaining member and a follower member which is normally attracted to the retaining member by a permanent magnet. A spring is interposed between the drive and follower members.



When the drive member is depressed into the retaining member, the spring is compressed, thereby accumulating the energy. When the accumulated energy overcomes the strength of the permanent magnet, the follower member is immediately pushed outwardly from the retaining member by the spring.

3,690,433

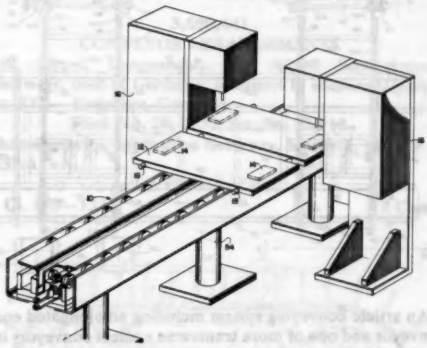
NONSYNCHRONOUS TRANSFER APPARATUS

Daniel A. Buldini, Revere, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed July 16, 1970, Ser. No. 55,463

Int. Cl. B65g *15/10, 21/12*; B23q *5/22*

U.S. Cl. 198—19 **5 Claims**



Closed loop conveyor apparatus for moving pallet supported workpieces comprising a pair of endless chain conveyors having guide rollers engaging guide rails, and pallet support rollers contacting the underside of the pallets. As a work station is approached, the support rollers may be rotated to slow down the speed of the pallets relative to the conveyors so that indexing means may remove the pallets from the conveyors and properly align the pallets at the work station. After a machining or assembly operation is completed, the pallets are replaced on the support rollers which may be rotated to smoothly increase their speed relative to that of the conveyors.

3,690,434

METHOD AND DEVICE FOR ORIENTING A SUCCESSION OF PARALLEL ROD-SHAPED OBJECTS

Henri Anfossi, Orleans, France, assignor to Service D'Exploitation Industrielle Des Tabacs Et Des Allumettes, Paris, France

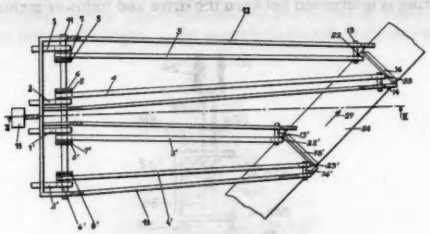
Filed July 7, 1970, Ser. No. 52,880

Int. Cl. B65g *47/24*

U.S. Cl. 198—20 R **5 Claims**

A method for modifying to a desired angle the orientation of a succession of rod-shaped objects conveyed in continuous

motion in substantially parallel alignment comprising the step of displacing each object respectively at two points thereof located on the same side of its longitudinal axis, in directions



which make a small angle with each other, and with different respective speeds regulated as a function of the value of the said angle so as to cause the said object to pivot through the said desired angle.

3,690,435

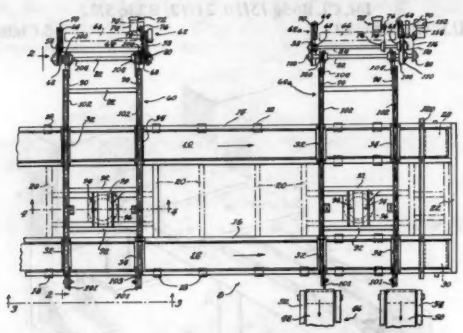
ARTICLE CONVEYOR SYSTEM

John W. King, 532 Cottage Grove, and John D. Sweeney, 1208 Shadow Lane, both of Green Bay, Wis.

Filed April 16, 1970, Ser. No. 29,146

Int. Cl. B65g *47/04*

U.S. Cl. 198—20 **10 Claims**



An article conveying system including an elongated endless conveyor and one or more transverse endless conveyors intersecting the elongated conveyor. The transverse conveyors are swingable in relation to the elongated endless conveyor to move the respective conveying reaches above and below one another and provide for the transfer of articles moving in one direction on the transverse conveyor to be conveyed in a second direction on the elongated conveyor.

3,690,436

INSERTER FOR PUTTING OBJECTS IN MOVING HOLES

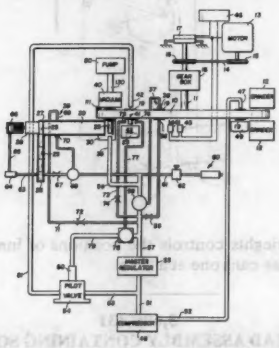
Dennis E. Mead, Cazenovia, N.Y.

Filed June 1, 1970, Ser. No. 42,014

Int. Cl. B65g *47/00*

U.S. Cl. 198—22 **52 Claims**

An inserter puts cylindrical rollers into the holes of bushings in a carrier disk that rotates between two grinding wheels for grinding the ends of the rollers. The inserter accomplishes this by feeding the rollers to a fixed inserting station adjacent the disk and thrusting the rollers pneumatically toward the holes in response to a timing device so that an air pressure differential created by a vacuum box on the other side of the disk forces the rollers into the holes. The timer is positioned rotationally ahead of the inserting station where the holes are normally empty and it includes a sender that directs an air stream against the disk along the hole path so that the air stream passes through each of the holes in succession, and a receiver that triggers the thrusting of the pneumatic inserter when the air stream passes through a hole. The timer is adjustable for



timing the thrust with registry of one of the holes with the inserting station. The invention also includes many safety and convenience features and is adaptable to many sizes of rollers and disks, and many speeds of operation.

3,690,437

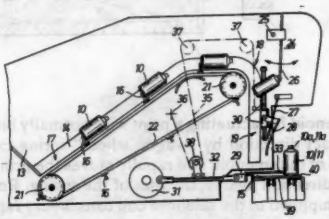
APPARATUS FOR ALIGNING AND ARRANGING ARTICLES IN UPRIGHT POSITION

Wilfried Kammann, Buende-Suedlengern, Germany, assignor to Werner Kammann, Buende-Westfalen, Germany

Filed Jan. 6, 1971, Ser. No. 104,325

Int. Cl. B65g *47/24*

U.S. Cl. 198—33 AA **9 Claims**



The present invention relates to an improved apparatus for aligning and erecting articles, more particularly hollow articles such as bottles including

a filling opening for introduction of articles to be set upright;

a plurality of conveying channels rising from said filling opening and each with an arcuate portion in the longitudinal extensions thereof;

conveyor means for said articles including a plurality of drivers engageable with and behind the articles in the region of each conveyor channel;

a plurality of aligning devices provided in the area of transition between the rising receiving area and a descending aligning area said aligning devices each having a catch member which swings about a horizontal axis and is engageable with a neck provided on an end of the article for turning said article and which is swung out of the area of movement of the article by the pressure of the article when arriving with its bottom end first;

an erecting surface provided below the said descending aligning area of the conveyor channel;

a push member associated with all the conveyor channels below the descending aligning area, which push member acts simultaneously on all the articles deposited in upright position on said erecting surface and pushes the said arti-

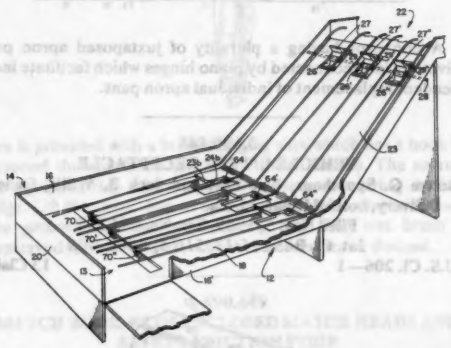
cles onto a conveyor belt serving to remove them; and displaceable guide means in the region below the said aligning device associated with each conveyor channel, and forming with the descending aligning member of said conveyor channels, a dropping chute for each article descending in an upright position with its bottom directed downwardly.

3,690,438

AUTOMATIC PACKAGING APPARATUS

James A. Goodman, 9347 Springfield Ave., Evanston, Ill.

Filed Nov. 27, 1970, Ser. No. 93,296
Int. Cl. B65g 17/00, 15/00
U.S. Cl. 198—34 **18 Claims**



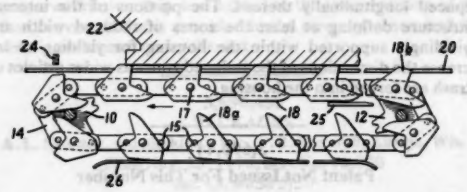
An apparatus for collating containers suitable for holding any quantity of a product packed in containers with heat sealed lids on flanged containers. The apparatus uses means for causing the vertical and lateral overlapping of the containers' flanges; said means comprising a plurality of suitably disposed guide rails and guide bars. The apparatus is both automatic and efficient.

3,690,439

ACCUMULATING CONVEYOR

Guenther L. Kuehl, Peekskill, and Axel Coelln, Wappinger Falls, both of N.Y., assignors to Guenther Systems, Inc., Buchanan and Z-Loda Corporation, New York, N.Y.

Filed May 17, 1971, Ser. No. 143,887
Int. Cl. B65g 17/40, 21/12
U.S. Cl. 198—110 **9 Claims**



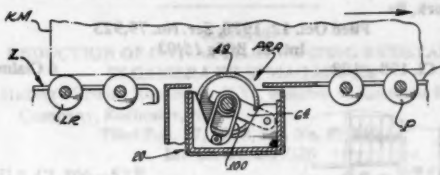
As disclosed herein, an accumulating conveyor comprises at least two spaced roller chains that travel in a prescribed endless loop below a storage surface. Aligned trigger cam members are selectively mounted on the chains. The cam members are displaceable between load supporting positions whereat the cam members support the unit loads of material and enable the loads to be transported by the chains between spaced locations and non-load supporting positions whereat the cam members travel beneath the unit loads of material without contacting the loads.

3,690,440

SELF-ENERGIZING RETRACTABLE POWERED DRIVE ROLLER ASSEMBLY

Duncan H. Macpherson, Edmonds, Wash., assignor to Western Gear Corporation, Lynwood, Calif.

Filed Oct. 9, 1970, Ser. No. 79,554
Int. Cl. B65g 13/02
U.S. Cl. 198—127 R **16 Claims**



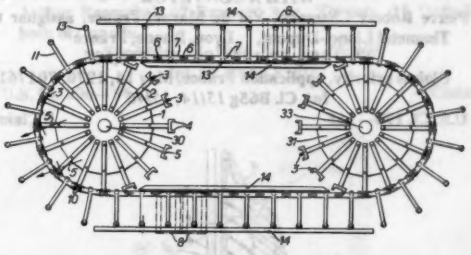
A drive roller assembly for propelling loads, in which a power driven roller or a plurality of rollers coupled universally in series are mounted independently at each end of a roller, each mounting including a cam to elevate the adjacent end of a roller, and each cam being operated by slip type clutch rings encircling a drum, the rings being continuously rotated by the same power source which drives the rollers, and yieldably transmitting power through the drum to rotate a cam with sufficient force to press a roller into driving traction with a load, at the same time automatically adjusting the attitude of the plane of the roller to generally match the plane of the bottom of the load engaged.

3,690,441

CONVEYOR ARRANGEMENTS

Bernd Zippel, Langenhain, and Alfred Schlieckmann, Eschwege, both of Germany, assignors to Richard Zippel & Co. KG, Eschwege, Germany

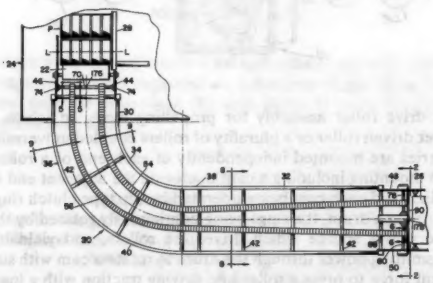
Filed Feb. 20, 1970, Ser. No. 12,918
Claims priority, application Germany, March 1, 1969, P 19 10 537.4
Int. Cl. B65g 17/00
U.S. Cl. 198—131 **5 Claims**



An endless conveyor arrangement for carrying moulds in a plant for producing shaped parts from multi-component plastics mould filling material, is disclosed. The arrangement comprises a chain having a plurality of first link members each arranged to carry a mould and a plurality of second link members intermediate the first link members and pivotally attached thereto. Each of the first link members comprises a pair of mutually spaced parallel plate members, between which the respective end portions of adjacent second link members project. The chain passes over two mutually spaced horizontal co-planar guide wheels, and the periphery of each guide wheel is formed by a plurality of forked members which are adapted to span the second link members of the chain. Linear support rails are disposed adjacent runs of the chain intermediate the guide wheels, and these support rails engage rollers or wheels mounted on the chain.

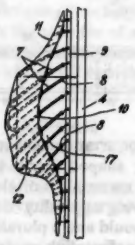
3,690,442
Patent Not Issued For This Number

3,690,443
TURN CONVEYOR
James R. Snyder, York, Pa., assignor to Teledyne, Inc., York, Pa.
Filed Oct. 12, 1970, Ser. No. 79,923
Int. Cl. B65g 15/02
U.S. Cl. 198—182 6 Claims



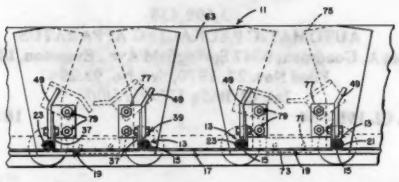
Article transporting apparatus having a rectilinear section at one or both ends of a curvilinear section, and including a plurality of laterally spaced endless conveyor elements extending the length of the transporting apparatus; operating said conveyor elements at relative speeds for turning the articles throughout their travel from one end to the other of the transporting apparatus to discharge them therefrom in the same orientation as they were delivered thereto, and means constraining the travel of the conveyor elements in particular paths coinciding with the pivotal axes of the articles on the conveyor elements.

3,690,444
PRESSER BELT FOR FIRMLY ENGAGING ARTICLES WITH A CONVEYOR
Pierre Robert Chassang, Val de Marne, France, assignor to Tissmetal Lionel-Dupont, Lyon, Rhone, France
Filed May 11, 1971, Ser. No. 142,285
Claims priority, application France, May 14, 1970, 7017611
Int. Cl. B65g 15/14, 15/40
U.S. Cl. 198—165 8 Claims



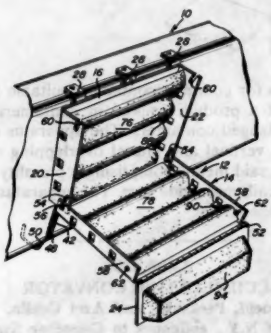
A presser belt for firmly pressing articles such as luggage against a belt conveyor, comprising a plurality of transverse elastic cables and a flexible concertina-folded band secured to the cables on the conveyor side and which can extend as the cables are stretched over conveyed articles, to prevent the cables catching on corners or edges of the articles. There may be another such band on the other side of the cables, the two bands being connected together to form tubular pockets for the cables.

3,690,445
APRON CONVEYOR
Ralph C. Ouska, Hinsdale, Ill., assignor to FMC Corporation, San Jose, Calif.
Filed May 18, 1971, Ser. No. 144,508
Int. Cl. B65g 15/30
U.S. Cl. 198—196 18 Claims



A conveyor having a plurality of juxtaposed apron pans pivotally interconnected by piano hinges which facilitate independent replacement of individual apron pans.

3,690,446
VEHICLE LITTER RECEPTACLE
Bettye G. Spainhour, Box 124, and Jack B. Willis, General Delivery, both of Ringgold, La.
Filed Nov. 5, 1969, Ser. No. 874,298
Int. Cl. B65d 25/12, 51/18; B60n 3/08
U.S. Cl. 206—1 13 Claims



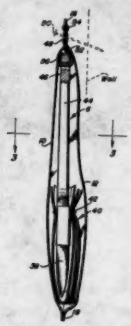
A trash receptacle including a housing having one open end provided with a closure therefor. The housing includes internal structure defining a cavity extending longitudinally of the housing and including alternating elongated zones of reduced and expanded width extending transversely of the housing and spaced longitudinally thereof. The portions of the internal structure defining at least the zones of reduced width are yieldingly supported within the housing for yielding to increase the dimensions of the reduced zones as wider articles of trash are forced into the housing.

3,690,447
Patent Not Issued For This Number

3,690,448
PAINT BRUSH STORING SEALABLE PLASTIC BAG
James A. Switzer, 311 1/2 Oak St., Paris, Ill.
Filed Sept. 28, 1970, Ser. No. 75,830
Int. Cl. A44b 7/00
U.S. Cl. 206—15.1 5 Claims

A readily openable, closable and sealable plastic bag provides an elongated pouch which enables a user to hang and store a wet paint brush therein for days——weeks if necessary. The mouth of the bag embodies quick separable and connecti-

ble top and bottom flaps. The top flap is provided with an elongated pliant male keying rib which snaps into a yieldable female keeper groove. When the rib is snapped into the groove the brush storing pouch is airtight. An eye fixed in one end of the bag permits hanging the bag on a fixed nail. This



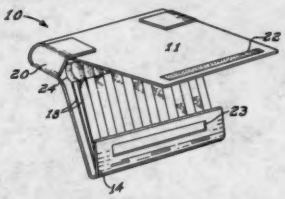
eye is provided with a brush hanging wire which has a hook to suspend the apertured end of the brush handle. The narrow rib-equipped-flap has a red marker strip bordering its free edge. Lift the "red" flap to open the bag and press the rib into the groove to close and seal the bag. The wet brush is preserved for ready re-use whenever necessary or desired.

3,690,449

MATCH BOOK WITH ENCLOSED MATCH HEADS AND SAFETY FRICTION STRIP

Morey Seldin, 2455 Via Lazo, Palm Springs, Calif.

Filed Aug. 12, 1970, Ser. No. 63,120
Int. Cl. A24f *27/00*
U.S. Cl. 206—29 1 Claim



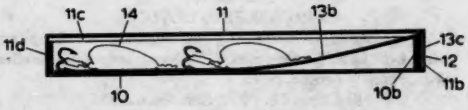
A match book with flaps enclosing the match heads, and with a safety friction strip mounted to the front cover. Two flaps integral with the back cover enclose the top side portion of the book and are secured to the front cover. A specially prepared friction strip is mounted to the lower portion of the front cover. A slot is provided in the cover retainer, and the strip is positioned under the slot.

3,690,450

PACKAGES

A. L. Sheldon, c/o Sheldon's Inc., P.O. Box 508, Antigo, Wis.

Filed Nov. 23, 1970, Ser. No. 92,020
Int. Cl. B65d *5/50*
U.S. Cl. 206—45.19 1 Claim



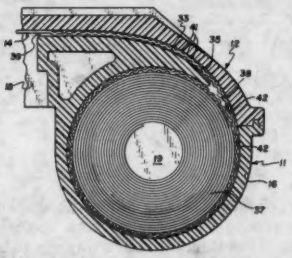
A package having a bottom receptacle portion and an openable cover fitting over the bottom portion and extending downwardly along the sidewalls of the bottom portion. One of the side walls of the cover has a cut-out portion providing a window therein. A card having a fold-line dividing the card into two panels is positioned between the cover and the bottom receptacle portion so that one panel extends into the receptacle portion of the box while the other extends downwardly between the sidewall of the receptacle portion and the windowed sidewall of the cover so that indicia appearing on the second panel is exposed through the window.

3,690,451

REDUCTION OF INITIAL FILM WINDING RESISTANCE IN CAMERA FILM MAGAZINES

Hubert Nerwin, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 17, 1970, Ser. No. 11,949
Int. Cl. G03b *17/26*
U.S. Cl. 206—52 F 7 Claims



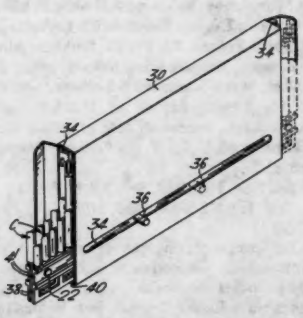
To counteract the tendency of film wound in a supply compartment from clockspringing and resisting initial unwinding, at least the outermost film convolution on the supply roll is transversely corrugated. As the film ages in the magazine, its inherent plasticity causes its clockspringing tendency to diminish and its corrugations to relax, thereby reducing the frictional contact pressure between the outermost film convolution and the compartment walls.

3,690,452

APPLICATOR ASSEMBLY

Leslie A. Ungar, 4415 Bathurst St., Downsview, Ontario, and Arthur Rosenthal, 67 Baycrest Ave., Toronto, 19 Ontario, both of Canada

Filed May 25, 1970, Ser. No. 39,995
Int. Cl. B65d *83/02*
U.S. Cl. 206—56 C 4 Claims



A comb-shaped unitary plastic moulding in which a plurality of applicators constitute the "teeth" of the "comb;" a readily breakable connection between each applicator and the comb spine or holder being provided by a relatively frail fillet intervening therebetween. Each said applicator has a reduced end on which a soluble chemical is encrusted and each moulding has hermaphroditic connection facilities for attaching it to

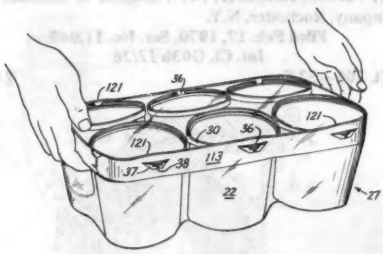
a second identical moulding in collateral relation; packaging for these mouldings being also contemplated by the invention.

3,690,453

METHOD OF COMBINING A PLURALITY OF TUB-SHAPED RECEPTACLES AS A UNITARY PACKAGE AND PACKAGE

Arthur G. Dorall, Redwood City, Calif., assignor to Kliklok Corporation, New York, N.Y.

Filed Feb. 25, 1971, Ser. No. 118,784
Int. Cl. B65d *65/16, 71/00, 85/62*
U.S. Cl. 206—65 S **12 Claims**



A unitary package of a plurality of tub-shaped receptacles is formed by seating the upper portions of the receptacles in apertures in the bottom panel of a tray whose upstanding side walls have receptacle-rim engaging apertures, optionally fitted with downwardly extending receptacle-rim-retaining tabs. An enclosing shrink film extending over the top, sides, bottom and ends of the assembly receptacles and tray causes the receptacles to tilt, thereby increasing the spacing between adjacent receptacle rims and minimizing the danger of rim contact which might cause one receptacle to pry off a friction-fitted lid on the adjacent receptacle during transport and handling. If open-ended, the shrink enclosure leaves open grab apertures at the ends of the package.

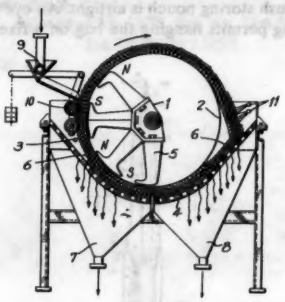
3,690,454

METHOD AND APPARATUS FOR MAGNETIC CONCENTRATION WITH FERROMAGNETIC SOFT IRON BODIES

Georgy Alexandrovich Bekhtle, Ljubertsy, ulitsa Kosmonavtov, 19, kv. 50, Moscow; Nikolai Fedorovich Myasnikov, Belgorodskol oblasti, ulitsa Frunze, 7a, kv., Gubkin; Jury Eremeevich Mitrofanov, Belgorodskoi oblasti, ulitsa Frunze, 7a, kv. 25, Gubkin; Evgeny Stepanovich Berestov, Belgorodskoi oblasti, ulitsa Frunze, 7a, kv. 27, Gubkin; Albert Frantsevich Kalvasinsky, Belgorodskoi oblasti, ulitsa Frunze 7a, kv. 10, Gubkin; Mark Lazarevich Letbson, ulitsa Antonenko, 4, kv. 16, Leningrad, all of U.S.S.R., and Viktor Gershovich Derkach, deceased, late of ulitsa Gavanskaya, 16, kv. 33, Leningrad, U.S.S.R. (by Galina Nisonvna Budnitskya, executrix)

Filed Nov. 18, 1969, Ser. No. 877,662
Int. Cl. B03c *1/30, 1/00*
U.S. Cl. 209—38 **8 Claims**

A method for concentrating pulverized weakly magnetic materials which include magnetic and non-magnetic fractions, by filtering the particles thereof through soft iron bodies. This method includes introducing the soft iron bodies into a magnetic field for separation of the magnetic fraction from the non-magnetic fraction and attracting the bodies against a transportation element by means of the magnetic field. Then the transportation element is moved through the magnetic field to remove the bodies and magnetic fraction from the field for separation of the bodies from the magnetic fraction. These soft-iron bodies are loosely arranged along the path, along which the transportation element moves in the magnetic field such that under the action of the magnetic field the bodies are attracted to the element and are carried by the latter through the magnetic field into a zone having no mag-



netic field, wherein the bodies are allowed to fall freely to separate the same from the magnetic fraction. Subsequently, the ferromagnetic balls or soft-iron bodies are redirected into the magnetic field for repeating the cycle.

3,690,455

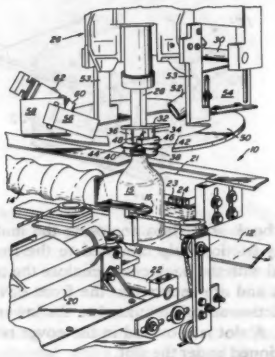
Patent Not Issued For This Number

3,690,456

GLASS CONTAINER CRACK DETECTOR

Whitney S. Powers, Jr., Pine City, N.Y., assignor to Powers Manufacturing, Inc., Elmira, N.Y.

Filed June 25, 1971, Ser. No. 156,769
Int. Cl. B07c *5/342*
U.S. Cl. 209—73 **7 Claims**



Glass containers are inspected for cracks and similar defects by a machine which will rotate the container during inspection in a manner so that the finish will rotate true and will simultaneously hold the container down against any vertical forces resulting from rotation of a container body which is out of round or tapered.

3,690,457

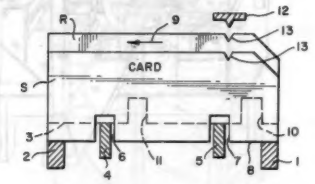
CARD SORTING DEVICE

John H. Lanahan, Whitesboro, and William W. Abraham, Utica, both of N.Y., assignors to Mohawk Industrial Laboratories, Inc., Vernon, N.Y.

Filed Aug. 10, 1970, Ser. No. 62,526
Int. Cl. B07c *3/00*
U.S. Cl. 209—80.5 **20 Claims**

A card sorting device comprises a bay for a plurality of edge-aligned, vertically oriented cards having a bottom edge

notched in at least one position in accordance with information on the cards. The cards are supported by front and rear support members extending generally transverse to the cards underneath the lower edges adjacent the front and rear edges of the cards. The device includes means for moving one or more selected code bars into a position transverse to the bottom edge of the cards and in alignment with the notches in the selected cards. When one or both of the support members is moved downwardly, the selected cards can move downwardly due to the alignment of the notches and the code bars. The remaining, rejected cards, do not have notches in alignment with the selected code bars and are restrained from moving downwardly by contact between their lower edges and the code bars. The rejected cards are then moved as a unit relative to the selected cards to effect separation. In a device of this



type, it is possible that a rejected card is restrained from downward motion by a single code bar or by a plurality of code bars located towards one end of the card. In either event, it is possible for such rejected cards to pivot downwardly about a code bar and this spurious downward pivotal movement may interfere with card selection since, for proper operation, only the selected cards should undergo downward motion. According to the present invention, rejected cards are restrained from spurious downward pivoting action in at least one sense about a code bar engaging the lower edge thereof at a point where there is no edge-notch. This spurious pivoting motion of rejected cards is prevented by providing an elongate member above the cards having a lower surface engageable with the upper edges of the cards near one end thereof. The rejected cards are thus restrained from upward pivotal motion of that end about a code bar.

3,690,458

Patent Not Issued For This Number

3,690,459

Patent Not Issued For This Number

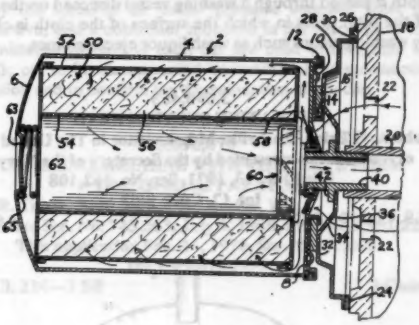
3,690,460

RELIEF VALVE FOR OIL FILTERS OR THE LIKE

Clifford L. Lindboe, Palatine, Ill., assignor to Ross W. Lyon; Rosclare M. Lyon and Robert E. Lyon, d/b/a Lyon Industries, Addison, Ill.

Filed March 11, 1971, Ser. No. 123,359
Int. Cl. B01d *35/14, 27/10*
U.S. Cl. 210—130 **3 Claims**

An oil filter cartridge has a relief valve unit that shunts the oil flow from the inlet to the outlet of the cartridge when the filter element becomes clogged. The unit comprises a shell that telescopes within the tubular filter medium of the cartridge. The shell contains a valve disc with integral leaf springs that bias the valve disc against valve ports in a plate or wall that is attached to an end of the shell so that when the valve disc is in open position, the oil flows from the inlet of the cartridge through the valve ports and into the shell and then outwardly through a central opening in the plate.

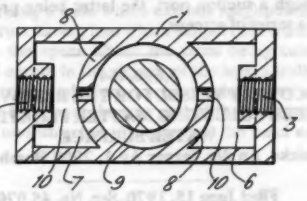


3,690,461

FILTER AND HOUSING FOR THE SAME

Heinrich Sommermeyer, Gera, Germany, assignor to Heinrich Sommermeyer KG, Gera, Germany

Filed Nov. 27, 1970, Ser. No. 93,317
Claims priority, application France, April 6, 1970, 7012397
Int. Cl. B01d *35/06*
U.S. Cl. 210—222 **3 Claims**



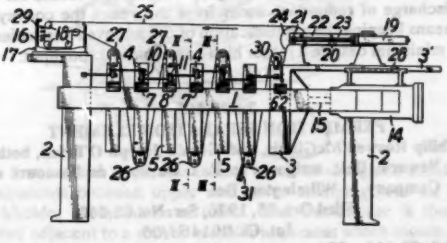
A filter for removing impurities from fluids. The filter housing is generally rectangular in cross-section, or, more generally is of prismatic shape, facilitating combination with flat end surfaces of cabinets, appliances and devices cooperating with the filter.

3,690,462

FILTER PRESS WITH ENDLESS FILTER CLOTH

Ken-ichiro Kurita, 36-4, 5-chome, Senriyama-nishi, Suita, Japan

Filed March 11, 1970, Ser. No. 18,459
Int. Cl. B01d *25/32*
U.S. Cl. 210—225 **4 Claims**



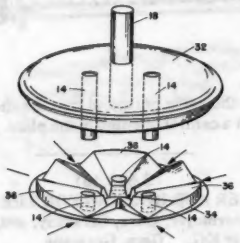
A filter press of plate-and-frame type or recessed plate type is provided with an endless filter cloth which is passed under

each of filter elements and over a filter element adjacent thereto in zigzag form. Rollers and drive means for moving the filter cloth in the zigzag form are also provided. The filter cloth is passed through a washing vessel disposed on the frame of the filter press in which the surface of the cloth is cleaned by washing means such as wash liquor ejecting pipes.

3,690,463
FLOATING SUCTION HEAD

John A. O'Brien, Rockville, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed July 13, 1971, Ser. No. 162,108
Int. Cl. C02b 9/02
U.S. Cl. 210—242 5 Claims

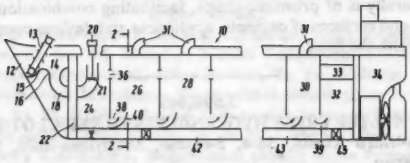


Apparatus used for collecting spilled oil from the surface of the sea including primarily a floating suction head connected to a pump by a flexible hose. The oil-water mixture enter the head through a suction port, the latter being protected from debris by a series of screens.

3,690,464
OIL RECOVERY VESSEL FOR THE REMOVAL OF OIL AND OTHER POLLUTING MATTER FLOATING ON THE WATER SURFACE

Karl Helnicke, An der Berner Au 1, 2000 Hamburg, 72, Germany

Filed June 15, 1970, Ser. No. 45,970
Int. Cl. C02b 9/02
U.S. Cl. 210—242 2 Claims



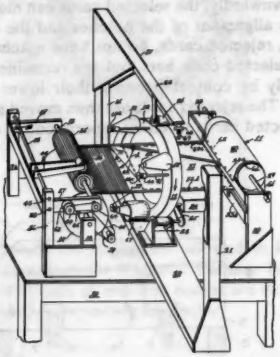
A novel oil recovery vessel for removing oil and other floating impurities from the water surface, is provided with means for collecting such impurities, means for conveying said collected liquid impurities through the vessel and means for the discharge of redundant water from the vessel the conveying means keeping the emulsification of the removed impurities to a minimum despite a rather high operational throughput.

3,690,465
PERMEATION SEPARATION ELEMENT

Philip Roswell McGinnis, and Gerald Joseph O'Brien, both of Newark, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 15, 1970, Ser. No. 81,060
Int. Cl. B01d 31/00
U.S. Cl. 210—321 7 Claims

An improved element for the selective permeation separation of components of fluid mixtures comprises (1) thin layers of substantially parallel hollow filaments separated by (2) thin foraminous materials which restrict movement and prevent nesting of the hollow filaments during use of the element, and (3) a resinous tube sheet structure encapsulating a portion of the hollow filaments, with open ends of the filaments extending through the tube sheet structure. A permeation separation device incorporates the improved element in a surrounding

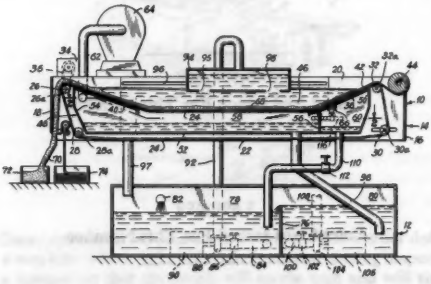


shell with means for introducing into and removing a fluid mixture from the shell and means for removing separated components of the mixture from the open ends of the hollow filament membranes. Preferably the device also contains a foraminous tube in the center with the foraminous material and hollow filaments convolutely wrapped around the tube. Such devices are particularly useful for the reverse osmosis desalination of water.

3,690,466
FILTER

Wilfred J. Lee, East Syracuse, and Frank R. Kaess, Oneida, both of N.Y., assignors to Clarkson Industries, Inc., New York, N.Y.

Filed Nov. 18, 1970, Ser. No. 90,666
Int. Cl. B01d 29/04
U.S. Cl. 210—387 6 Claims



A flat bed filter in which a filter medium in strip form is supported on an endless conveyor and supports a pool of contaminated liquid to be filtered. The conveyor is periodically advanced to provide fresh filter medium for filtering the contaminated liquid. The underside of the conveyor communicates with an evacuated compartment which is separated into separate chambers by a transverse partition. The transverse partition is in sealing engagement with the underside of the conveyor that advances the filter medium, and a means is provided for maintaining the chamber nearest the supply of filter medium at a higher pressure than the adjacent chamber in order to reduce the flow rate of contaminated liquid through the portion of filter medium initially exposed to the pool of liquid to be filtered.

3,690,467

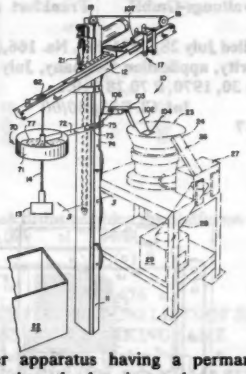
Patent Not Issued For This Number

3,690,468

ARTICLE TRANSFER APPARATUS

Robert W. Decker, and Robert F. Mole, both of Beltsville, Md., assignors to Agricultural Specialty Co., Inc.

Filed June 11, 1970, Ser. No. 45,518
Int. Cl. B66c 21/00
U.S. Cl. 212—84 13 Claims



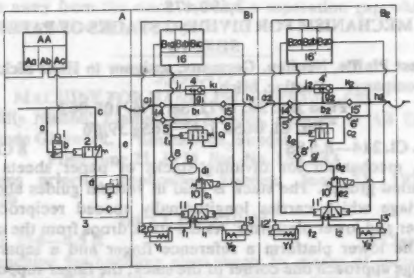
Article transfer apparatus having a permanent magnet movable in a housing, the housing and magnet being supported by a cable which extends upwardly from the magnet and housing through a carriage movable in an inclined traverse arm between loading and discharge stations. An anti-slack cable system includes a pulley engaging the cable and mounted on an endless belt the opposite end of the cable carrying a deadweight engageable with a stop to limit its movement. At the discharge station, parallel arms carry a plate which engages the upper surface of the housing, to provide movement of the magnet in the housing to discharge articles and to prevent swing of the magnet, the housing and the load. The cable at the loading station passes through a resilient foam disc having radial slits, which brushes objects only loosely magnetically attracted to the magnet.

3,690,469

SYSTEM FOR AUTOMATICALLY RELEASING CONNECTION BETWEEN CARS IN TRAIN

Yutaka Nagoya, Ashiya, and Toshio Toi, Amagasaki, both of Japan, assignors to Nippon Air Brake Company, Ltd., Kobe, Japan

Filed Aug. 25, 1970, Ser. No. 66,834
Claims priority, application Japan, Dec. 8, 1969, 44/97804
Int. Cl. B61g 1/08, 1/16, 3/08
U.S. Cl. 213—212 7 Claims



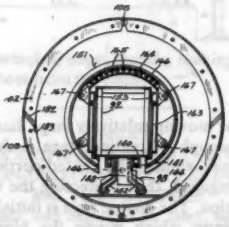
A system for automatically releasing the connection between cars in a train by a combination of electrical and pneumatic controls in which a line for supplying air under pressure extends from the locomotive to the cars so as to disconnect any desired car from the preceding or succeeding car by the force of air under pressure supplied from the locomotive, and a controller mounted in the locomotive and transmitters mounted in each car are used to designate the specific car to be disconnected, to instruct the disconnecting operation and to confirm the disconnection of the car.

3,690,470

TUNNELING MACHINE WITH CONCRETE FORM TRANSFER APPARATUS

John R. Tabor, 3400 Spruce St., Racine, Wis.

Division of Ser. No. 743,363, July 9, 1968, Pat. No. 3,561,223.
This application Feb. 24, 1970, Ser. No. 17,005
Int. Cl. E01g 5/06
U.S. Cl. 214—1 BB 3 Claims



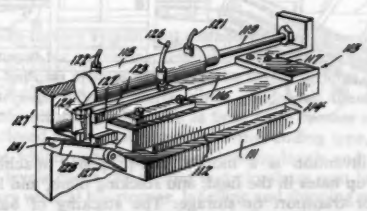
A tunneling machine having a form transfer and handling device comprising a truss which extends longitudinally of the tunnel, said truss having legs which support the truss from the tunnel floor, the space about the truss being substantially unobstructed except in the vicinity of the legs, a trolley movable along the truss, and a form carrier on the trolley to pick up form sections from near the rear end of the truss and convey them in said unobstructed space toward the head end of the tunnel.

3,690,471

APPARATUS FOR TRANSFERRING COMPONENTS OF A SEALED CONTACT SWITCH TO AN ASSEMBLY MACHINE

James C. McConnell; Samuel Pinnolis, and Wilhelm E. A. Schmidt, all of Winston-Salem, N.C., assignors to Western Electric Company, Incorporated, New York, N.Y.

Division of Ser. No. 862,541, May 15, 1969, Pat. No. 3,583,577, which is a division of Ser. No. 620,320, March 3, 1967, Pat. No. 3,491,425. This application Jan. 26, 1971, Ser. No. 109,882
Int. Cl. B65g 59/06
U.S. Cl. 214—1 BT 6 Claims



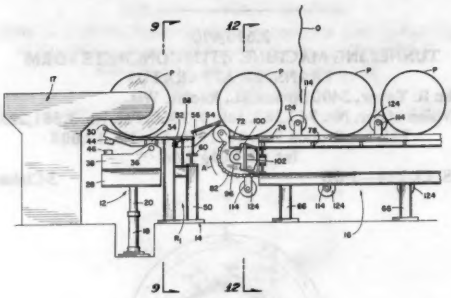
A first transfer apparatus inserts a pair of elongated article components between upper and lower clamping jaws on a workholder mounted on a turret. The workholder is then moved adjacent to a second transfer apparatus which inserts a hollow article component into the workholder and moves the clamping jaws to insert the elongated components into the hollow component to assemble the article.

3,690,472

PIPE HANDLING APPARATUS

Earnest C. Poore, and John A. Goforth, Jr., both of Gadsden, Ala., assignors to Midwestern Specialties Ltd., Tulsa, Okla.

Filed Feb. 26, 1971, Ser. No. 119,197
Int. Cl. B65g *11/00*
U.S. Cl. 214—1 P 15 Claims



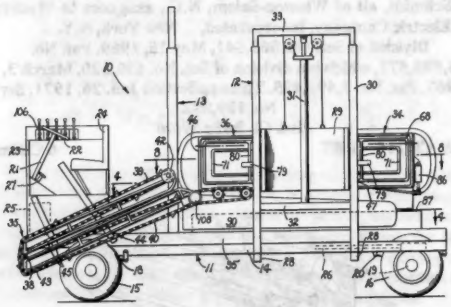
An apparatus for moving relatively large diameter sections of coated pipe through a treating stage such as a heating chamber in a manner wherein the coated portions of the pipe sections are not engaged, thus protecting the coating during the treating operation. The coated pipe is initially received by an elevator apparatus which moves the pipe to an intermediate station for transfer to a conveyor apparatus which moves the coated pipe through the treatment area, such as an oven or the like for discharge therefrom subsequent to the treating or heating operation. The pipe is supported in a manner precluding damage to the beveled pipe ends and precluding engagement with the coated portions thus greatly facilitating the coating of large diameter pipe.

3,690,473

BALE HANDLING DEVICE

Marvin E. Miguel, 12691 S. 10th, Hanford, Calif.

Continuation-in-part of Ser. No. 717,533, April 1, 1968, abandoned. This application June 16, 1969, Ser. No. 843,890
Int. Cl. B65g *57/24, 57/32*
U.S. Cl. 214—6 B 17 Claims



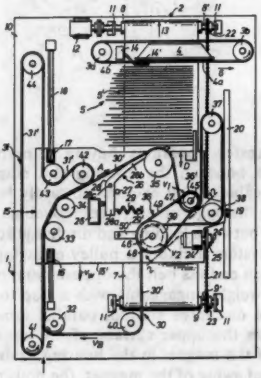
This invention is a mobile, self-propelled machine for picking up bales in the field, and stacking them, and loading them for transport or storage. The stacking of bales for highway transport requires that alternate tiers be formed with the bales placed in different positions with respect to the bales in the adjacent tier, so that ties are formed between the tiers to hold the stack together. A tie is formed by placing the outside bales of one tier in such a position that they overlap the division between two bales of an adjacent tier. My bale stacker and loader picks up the bales from the field, arranges them in seven tiers of eight bales each with the bales in alternate tiers positioned to form the necessary ties to form a transportable 56 bale stack. In addition, my bale stacker and loader is capable of unloading the 56 bale stack onto the ground, a truck bed, or into position in a larger storage stack, and of loading and transporting such a stack of bales.

3,690,474

CONVEYING DEVICE WITH TWO END POSITIONS CONNECTED BY A CONVEYOR BELT AND INCLUDING A CONTROLLABLE DRIVE CONNECTION

Karl Klappenecker, Constance, Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Germany

Filed July 28, 1971, Ser. No. 166,666
Claims priority, application Germany, July 30, 1970, P 20 37 741.7; July 30, 1970, P 70 28 610.1
Int. Cl. B65g *60/00*
U.S. Cl. 214—7 6 Claims



In a conveying device of the stacker type including a linearly displaceable carriage and a conveyor belt from which the carriage derives a motive force, a controllable drive connection is provided between two movable rollers, which form part of the connection, and means are provided to connect the two movable rollers so that the translation ratio definable by the peripheral speeds of the two rollers can be greater or less than 1 depending on the desired direction of movement of the carriage, or a pair of controllable drive connections, one with a translation ratio greater than 1, and one with a translation ratio less than 1, are provided so that the carriage can be controlled in both directions of motion.

3,690,475

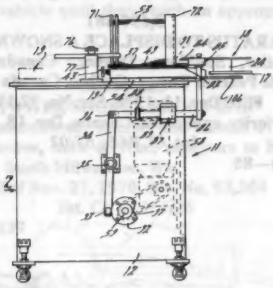
MECHANISM FOR DIVIDING STACKS OF PAPER SHEETS

Ernest Pfaffle, Neuffen, Germany, assignor to Hans Sickinger Company, Pontiac, Mich.

Filed Jan. 20, 1971, Ser. No. 108,062
Int. Cl. B65h *3/32*; B65g *59/06*
U.S. Cl. 214—8.5 SS 8 Claims

A mechanism for dividing stacks of paper sheets into counted groups. The stack is held in vertical guides above a carriage which carries longitudinally spaced reciprocating upper and lower platforms. As the stack drops from the upper to the lower platform a reference finger and a separating wedge approach one corner of the stack, the finger supporting the stack and the wedge entering the stack at a predetermined height above the finger. At this point the carriage begins its

return movement and the upper platform enters the stack at the height of the wedge, both members then retracting. The counted group then drops between the platforms onto delivery bars.



3,690,476

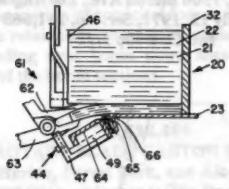
APPARATUS FOR FEEDING LIFTS OF SHEETS WITHOUT MARKING SAME

Edson H. Stacy, East Baldwin, Maine

Filed June 21, 1971, Ser. No. 154,832

Int. Cl. B65g *59/06*

U.S. Cl. 214—8.5 SS **10 Claims**



A sheet magazine containing limp sheets, cover sheets or carbon sheets avoids stabber damage and carbon smudging of conventional feeds by the use of a sharp pointed, small diameter segregation needle cooperable with but independently mounted relative to a pressure clamp member and a hold back finger member. The needle reciprocates parallel to the plane of the sheets on a movable member at the magazine gateway to pierce into the stack between adjacent sheets without damaging the sheets. The movable member then moves the needle away from the stack to form a separation gap which permits extraction by gripper jaws.

3,690,477

MACHINE FOR HANDLING SHEET GLASS

Leif Billy Nilsson, Emmaboda, Sweden, assignor to AB Emmaboda Glaswerk, Emmaboda, Sweden

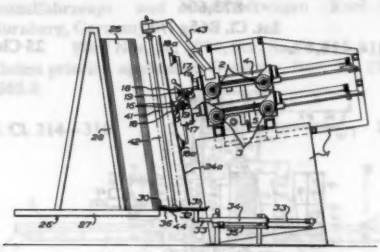
Filed June 21, 1971, Ser. No. 154,843

Claims priority, application Sweden, June 22, 1970, 8550/70

Int. Cl. B65g *59/04*

U.S. Cl. 214—8.5 B **4 Claims**

A machine for handling glass sheets by means of suction cups and provided with means facilitating removal of the sheets one by one from a pack by displacing the outermost sheet a short distance in its own plane, tilting it so that one edge thereof is detached from the surface of the next sheet while holding back said next sheet at said edge, and blowing in air behind the detached edge, thereby making possible a rapid withdrawal of sheet from the pack.



3,690,478

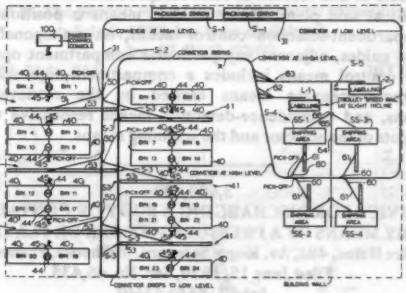
APPARATUS AND METHOD FOR CONVEYING AND SORTING NON-UNIFORM ARTICLES IN AND INTRA-FACTORY SYSTEMS

Paul L. Brummett, and Sigmund G. Isley, both of Smithfield, N.C., assignors to Amerel Company, Inc., Smithfield, N.C.

Division of Ser. No. 35,179, May 6, 1970, Pat. No. 3,627,153. This application Nov. 8, 1971, Ser. No. 196,611. The portion of the term of this patent subsequent to Dec. 14, 1988, has been disclaimed.

Int. Cl. B65g *1/06*

U.S. Cl. 214—16.4 R **4 Claims**



An intra-factory system and method provides a semi-automated means for conveying, temporarily storing and segregating non-uniform articles which may be textile articles such as coats, dresses, blouses, shirts, piece goods and the like or other non-uniform articles such as tires, filled cartons and the like. A closed loop, continuously moving, coding type, chain conveyor which operates at lower loading levels and higher pick-off levels codes the articles and circulates past loading, temporary vertical bin storage, labelling and shipping stations. Storage is provided by a plural group of vertical storage bins having storage rods which for each bin can be selectively positioned either locally at the bin or remotely at a master console. The articles are picked off the conveyor automatically and by gravity slide are directed to selected bins where they are temporarily stored and from which they are returned and recoded on the same conveyor for transfer to and pick-off at selected labelling or shipping stations.

3,690,479

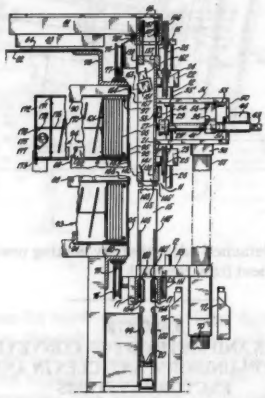
AUTOMATIC SEARCH AND RETRIEVAL SYSTEM

John A. Castaldi, Brooklyn, N.Y., assignor to Supreme Equipment & Systems Corp.

Continuation-in-part of Ser. No. 681,259, Nov. 7, 1967, Pat. No. 3,490,616. This application Nov. 3, 1969, Ser. No. 873,606

Int. Cl. B65g 1/06

U.S. Cl. 214—16.4 A 25 Claims



The invention contemplates efficient, automatic retrieval of selected quantities of specific items from an inventory which may involve a large variety of items. The inventory is presented via a two-dimensional matrix of stationary storage compartments having open sides in essentially a single retrieval-access plane common to the compartments of the matrix. Each compartment accommodates a stacked plurality of like items, with an end item of each stack presented at a retrieval-access plane. Digitalized character identification applicable to and located at each compartment is externally exposed at said plane. Retrieval-slide means is positioned by compartment-selection control means, on orthogonally related guides, adjacent any particular compartment opening. The control means includes a compartment-digit selector, character-scanning means carried by the retrieval-slide means, and coincidence-detection means responsive to the outputs of the selector and the scanning means.

3,690,480

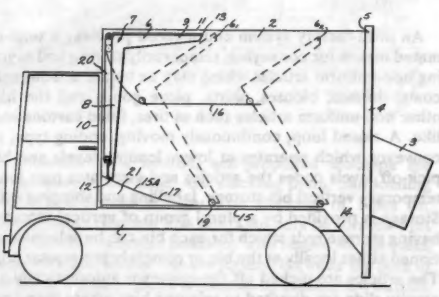
DEVICE FOR DISCHARGING A BODY OR CONTAINER BY MEANS OF A PRESSURE MEMBER OR PLATEN

Desire Heine, 48a, Av. Roger Salengro, Mulhouse, France

Filed June 15, 1970, Ser. No. 46,435

Int. Cl. B65g 65/40

U.S. Cl. 214—17 D 2 Claims



A device for discharging or emptying a body or container, e.g., for refuse, by means of a pressure platen or member, which has two adjacent plates or faces abutting the bottom and one of the walls of the refuse body respectively, comprises pivot and guide means designed in such a way, that the attacking edge of each face of the pressure member follows the surface of the respective wall during emptying or discharging.

3,690,481

APPARATUS TO DISPLACE A SNOWMOBILE

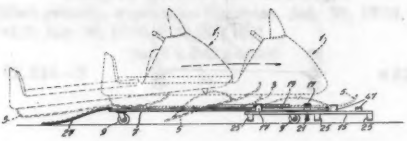
Marc Pelletier, Ste-Flore, Quebec, Canada, assignor to Ebenisterie Pelletier Enr., Quebec, Canada

Filed Dec. 11, 1970, Ser. No. 97,199

Claims priority, application Canada, Dec. 18, 1969, 070,662

Int. Cl. B65g 67/02

U.S. Cl. 214—85 7 Claims



An apparatus to be used for displacing a snowmobile, the apparatus being formed of a platform mounted on swivelling wheels and provided at one end with braking shoes to avoid rolling of the platform when the snowmobile comes down from the platform on its own power. The apparatus is also preferably provided with a s semi-rigid strip at the other end of the platform to be used by the snowmobile to climb thereon, always under its own power, without the platform moving away from the snowmobile.

3,690,482

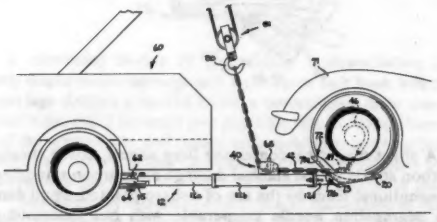
VEHICLE TOWING DEVICE

Richard J. Gaumont, 7906 Bleroit Ave., Los Angeles, Calif.

Filed July 12, 1971, Ser. No. 161,668

Int. Cl. B60p 3/12

U.S. Cl. 214—86 A 14 Claims



A vehicle towing device of the cradle type has a pair of cradle arms which are connected to a tow truck through a support member which may comprise a plate. One of the ends of each of the arms is attached to the support member for pivotal motion about a substantially vertical axis. The support member is attached to the lower structure of a tow truck by means of a ball and socket joint which permits limited two degree motion. The ends of the cradle arms opposite to those attached to the support plate have trays attached thereto for retaining and supporting the wheels of the vehicle to be towed. The cradle arms are interconnected at points therealong intermediate the opposite ends thereof by means of an adjustable bridging cross member. Means are provided for adjusting the lengths of the arms and that of the bridging interconnecting member to adapt the device in the field for utilization with various size vehicles. The bridging interconnecting member has a bracket unit attached thereto, through which the tow chain or cable fits. In utilizing the device, one end of each of two tow cables or chains is secured to the axle or the frame of the vehicle to be towed, each of these chains or cables being

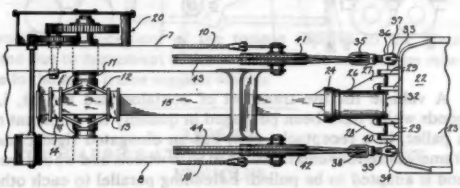
fitted through the aforementioned bracket and thence attached to the tow truck lift mechanism. When the lift mechanism is operated, the vehicle is first drawn onto the wheel support trays where the wheels are appropriately retained. Further lifting action of the lift mechanism lifts the cradle arms off the ground carrying along with it the front wheels of the vehicle until they reach an appropriate towing position.

3,690,483

POWER SHOVEL FRONT END

Melvin W. Kraschnewski, Racine, and Gerald F. Lesniewski, South Milwaukee, both of Wis., assignors to Bucyrus-Erie Company, South Milwaukee, Wis.

Filed Nov. 27, 1970, Ser. No. 93,304
Int. Cl. E02f 3/28
U.S. Cl. 214—137 2 Claims



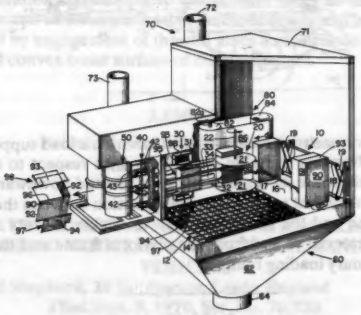
A twin-section boom is pivotally attached to the front of an excavator frame, and a saddle block pivotally mounted approximately half-way up the length of the boom slidably retains a dipper handle that moves back and forth between the boom sections. A pinion gear located in the saddle block and driven by a hydraulic motor engages a rack gear on the underside of the handle to provide a crowd-retract motion. A dipper is rotatably attached at the forward end of the handle to prevent transmission of torsional forces along the handle, and the dipper is retained in an upright attitude by twin dual hoist ropes extending over boom point sheaves attached at the upper ends of the boom sections.

3,690,484

ROTARY BLADE CARTON RIDDLER

Warren H. Harlan, Forest Park, and Albert J. Spaeth, Greenhills, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 21, 1970, Ser. No. 99,884
Int. Cl. B65g 65/00
U.S. Cl. 214—305 10 Claims



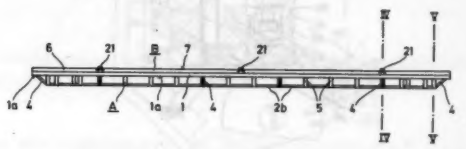
A carton riddler is described in which the cartons are cut across three sides, top and bottom, forming articulated end flaps attached to the fourth side. The end flaps are cammed "open" and the product is dumped into a collection hopper. The carton is subsequently flattened and creased in such a way as to maintain the carton in flattened condition.

3,690,485

PORTABLE PLATFORMS, WITH ROLLER MEANS INSTALLED ON THEIR UPPER SIDE, FOR THE HANDLING AND TRANSPORTING OF FREIGHT

Hans Jurgen Fischer, Haibach, and Georg Behrmann, Lauf Pegnitz, both of Germany, assignors to Faun-Werke Kommunalfahrzeuge und Lastkraftwagen Karl Schmidt, Nurnberg, Germany

Filed Nov. 20, 1970, Ser. No. 91,415
Claims priority, application Germany, Nov. 21, 1969, P 19 58 565.0
Int. Cl. B65g 67/02
U.S. Cl. 214—310 13 Claims



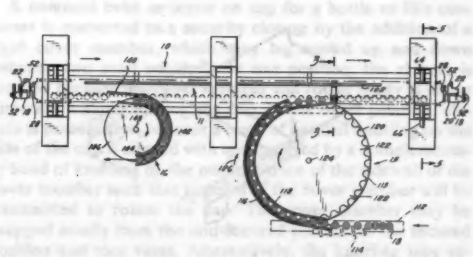
A portable supporting platform particularly adapted for intermodal transporting and handling of containerized freight, in which there is an upper section upon which the freight is supported, and a lower section having roller means extending upwardly through openings in the upper section to rollingly support the freight when the upper and lower sections are in assembled relation. The upper section or both sections include attachments for conventional lifting and for securing means to permit transporting of such sections together with the freight as an integral unit.

3,690,486

HIGH SPEED CONTAINER DRAINING APPARATUS

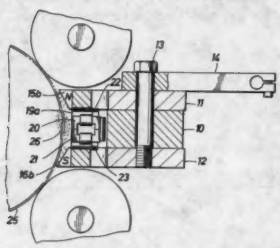
Jerry L. East, Lynchburg, Va., assignor to Simplimatic Engineering Co., Lynchburg, Va.

Continuation-in-part of Ser. No. 814,946, April 10, 1969, Pat. No. 3,591,027. This application Jan. 21, 1971, Ser. No. 108,520. The portion of the term of this patent subsequent to July 6, 1988, has been disclaimed.
Int. Cl. B65b 69/00
U.S. Cl. 214—311 20 Claims



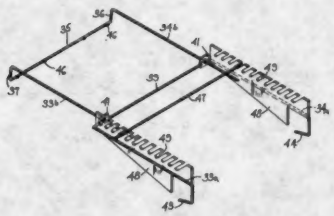
Open ended containers with rinse water in them are carried along a drying path which includes at least one curved path segment, the containers being carried along that curved segment with their open ends facing radially outwardly. As a result, an outwardly directed centrifugal force is effective to expel the rinse water from the containers. The containers are fed onto and off of individual support means carried by a conveyor means and means are provided for moving said individual support means radially outwardly of said conveyor means prior to said containers traversing said curved path segment and for returning said individual support means to their initial positions at the end of the drying path for removal from the conveyor means. As a result there is an increase in effective radius of the curved path segment, thereby to increase the effective net centrifugal force acting on the rinse water, although but a single conveyor means is utilized.

3,690,487
ORIENTING APPARATUS
John S. Evans, Jr., and Leslie L. Jasper, both of Houston, Tex., assignors to Mark Products, Inc., Houston, Tex.
Filed May 28, 1971, Ser. No. 148,041
Int. Cl. B65g 7/00
U.S. Cl. 214—340 15 Claims



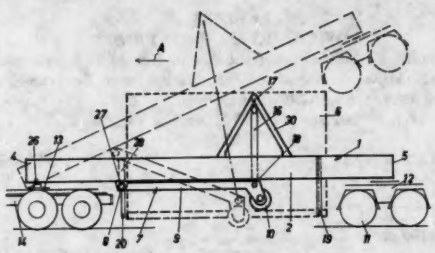
Apparatus is disclosed that uses a known structural discontinuity in the wall of an object to orient the object. The wall of the object is moved through a magnetic field. As the known discontinuity, such as the longitudinal seam of a can, moves through the field, the field is disturbed and distorted. A magnetic detector head is positioned so a current will be induced in the head by the change in the magnetic field caused by the discontinuity. The induced current is used to stop the moving object after a predetermined time period, which may be zero. Thus, a plurality of similar objects can be sequentially passed through the field and all will be oriented in the same relative position.

3,690,488
HANDTRUCK JIG
John T. Cave, 1892 Shepard Ave., Hamden, Conn.
Continuation-in-part of Ser. No. 23,279, March 27, 1970, abandoned. This application Aug. 21, 1970, Ser. No. 65,854
Int. Cl. B62b 1/06
U.S. Cl. 214—383 8 Claims



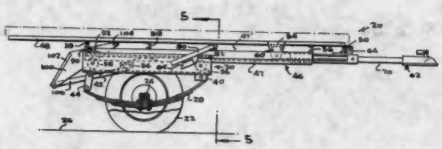
A device for supporting a load on a handtruck comprising a pair of leg members, a hooked extension on one end of each of said leg members, an angled extension on the other end of each of said leg members, a bar fixed transversely of said angled extensions whereby said leg members are spaced apart in approximately parallel relationship, and a depending member mounted on each leg adjacent said hooked extension for cooperating with said hooked extension in holding the device on a crossbar of a handtruck. Protrusions preferably are fixed along the transverse bar to aid in gripping the handtruck load. The depending member may be a finger-like member or may be a triangular plate which also aids in aligning the hooked extensions over a crossbar on the handtruck. The leg members may be segmented and the segments connected by adjusting and locking means in order to vary the length of the legs and to fix them at the desired length.

3,690,489
VEHICLE FOR TRANSPORTING CONTAINERIZED FREIGHT
Hugo Mischek, Vienna, Austria, assignor to Siler AG, Luzern, Switzerland
Filed Nov. 10, 1970, Ser. No. 88,424
Int. Cl. B60p 3/00
U.S. Cl. 214—390 7 Claims



A vehicle for the transport of containerized freight, i.e. goods which have been packaged in quantity for shipment on a pallet, in a receptacle, etc., has an elongated rigid closed frame whose rear end is provided with wheels and whose front end is adapted to be pulled. Extending parallel to each other and to each side of an opening in the frame are a pair of arms which each have one end pivoted toward the front of the frame and another end attached to one end of an expansible hydraulic cylinder supported toward the rear of the frame. Expansion of the cylinders pushes the free end of the arms downwardly. These free ends are provided with wheels, which can be the usual road wheels of the vehicle, so that when the cylinders are actuated, the rear end of the frame is lifted and the frame, in this position, can be backed over a container and thereafter lowered around it. Means is provided around the frame opening to grab the container and lift it into place within the opening for transport.

3,690,490
TRAILER CONSTRUCTION
Harry P. Hall, Franklin, Tenn., assignor to Diversified Metals, Inc., Smyrna, Tenn.
Filed Jan. 12, 1971, Ser. No. 105,910
Int. Cl. B60p 1/28, 3/10
U.S. Cl. 214—506 3 Claims

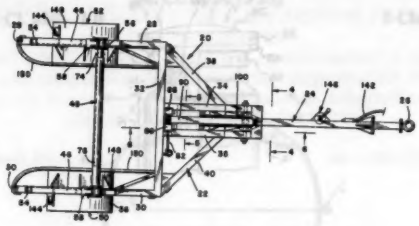


A trailer construction is provided in which a load supporting platform frame is shiftable rearwardly with respect to a supporting axle while its rearmost edge is pivoted downwardly to provide a resultant small angle of inclination between the platform frame and the ground surface to enable an easy movement of material to and from the platform frame and to serve as a stationary loading ramp.

3,690,491
REEL TRAILER
Cornelius Butler, Jr., Rt. 8 Box 647, Greensboro, N.C.
Filed Dec. 7, 1970, Ser. No. 95,769
Int. Cl. B60p 1/28
U.S. Cl. 214—506 10 Claims

A cable reel trailer including a wheeled, Y-shaped main frame is pivotably attached to a tongue having a coupling for

attachment to a towing vehicle. Reel supporting and lifting surfaces, secured to uprights mounted upon the main frame, transfer the reel between the trailer and the ground upon



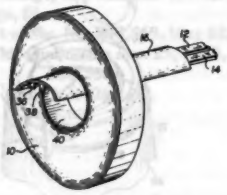
pivotable displacement of the tongue relative to the main frame due to movement of the towing vehicle and tongue relative to the main frame support wheels.

3,690,492

COIL CARRIER ATTACHMENT FOR FORK LIFT VEHICLES

Sherman J. Shore, Pittsburgh, Pa., assignor to Mapco, Inc., Valencia, Pa.

Filed Aug. 21, 1970, Ser. No. 66,012
Int. Cl. B66f 9/12
U.S. Cl. 214—620 **14 Claims**



An attachment for fork lift vehicles removably mountable upon the fork lift elements thereof and having a convex outer configuration conforming to the circular inner surface of an annular coil of sheet material to facilitate lifting and hauling of the coil by engagement of the coil inner surface upon the conformed convex outer surface of the attachment.

3,690,493

Patent Not Issued For This Number

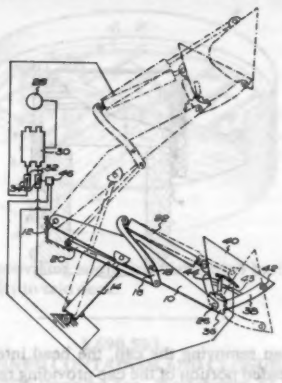
3,690,494

ATTACHMENT APPARATUS FOR MATERIAL HANDLING VEHICLES, AND MATERIAL HANDLING VEHICLES

Edward Shepherd, 28 Sandyacres, Leeds, England

Filed Sept. 9, 1970, Ser. No. 70,720
Int. Cl. B66f 9/00
U.S. Cl. 214—774 **2 Claims**

In a materials handling vehicle with lift arms, a cradle is pivotally mounted on the lift arms and a material handling bucket is pivotally mounted on the cradle. The bucket can be locked to the cradle to enable normal tipping of the bucket on the lift arms by the tipping ram, or the cradle can be locked to the lift arms to enable tipping of the bucket on the cradle to enable the tipping height to be increased without increasing the overall height of the vehicle. There may be an acceleration



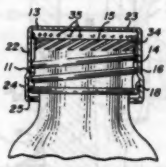
linkage between the tipping ram and bucket to obviate the need for using an extra long tipping ram.

3,690,495

SECURITY CLOSURE FOR A SCREW TYPE CONTAINER

Lloyd S. Turner, 50 Chestnut St., Los Gatos, Calif.

Filed Sept. 28, 1970, Ser. No. 76,159
Int. Cl. B65d 55/02
U.S. Cl. 215—9 **1 Claim**



A common twist or screw on cap for a bottle or like container is converted to a security closure by the addition of a rigid cover member, which may be moved up and down between two axial positions. In one position, the closure is secured because the cover member will rotate freely in either direction without turning the cap. In the other position, closure is non-secured because a band of parallel knurling on the side of the cap is aligned with and engaged by a complementary band of knurling on the inside surface of the sidewall of the cover member such that rotation of the cover member will be transmitted to rotate the cap. The cover member may be snapped axially from the non-secured position to the secured position and vice versa. Alternatively, the knurling may extend diagonally within the bands whereby the cover member will be automatically cammed into the engaged position when turned in one direction, and into the disengaged position when turned in the opposite direction. In this embodiment, the closure may be removed by both twisting and pressing the cover member axially downwardly at the same time.

3,690,496

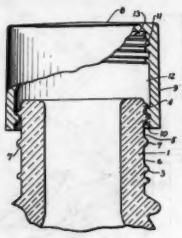
SAFETY CLOSURE FOR BOTTLES

Royal H. Gibson, Rumson, N.J., assignor to Gibson Associates Incorporated, Cranford, N.J.

Filed April 1, 1971, Ser. No. 130,156
Int. Cl. B65d 55/02
U.S. Cl. 215—9 **5 Claims**

A bottle closure in which the neck of the bottle is provided with upper and lower threaded portions separated by an unthreaded portion divided into two parts by an annular bead.

A cap is provided with upper and lower internally threaded portions separated by an unthreaded portion of a width substantially equal to the width of the unthreaded portion of the



neck. When removing the cap, the bead interferes with the lower threaded portion of the cap providing resistance to easy removal.

3,690,497

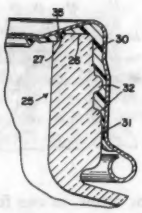
CLOSURE CAP AND PACKAGE FORMED THEREWITH

Frank H. Lecinski, Jr., Harwood Heights, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed March 8, 1971, Ser. No. 122,049

Int. Cl. B65d 23/00

U.S. Cl. 215—40 **10 Claims**



A closure cap of the press-on turn-off type having a gasket retaining channel formed with a frusto-conical inner wall which cooperates with the relatively abrupt inside top radius or corner of the relatively wide flat top seal finish of a container. The inside top radius or corner acts as a circumferential ridge that deeply indents the gasket material so as to pinch the opposing gasket material between the frusto-conical channel sidewall and the abrupt radius into a thin annular section which acts to minimize oxygen permeation and also to prevent cap settling with resultant increase of removal torques.

3,690,498

CHILD-RESISTANT STOPPER-TYPE CLOSURE

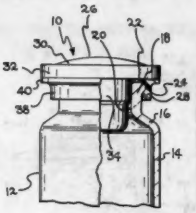
Paul W. Harbauer, 232 E. 5th st., Perrysburg, Ohio

Filed April 26, 1971, Ser. No. 137,137

Int. Cl. B65d 55/02

U.S. Cl. 215—9 **14 Claims**

A child-resistant closure for a bottle comprising a resilient plastic stopper having a top flange extending outwardly beyond the rim of the bottle. The open mouth of the bottle is fitted with a unique resilient plastic fitment which is permanently attached on the open rim of the bottle and includes an outwardly directed flange underlying the flange of the plastic stopper. The closure is opened by applying an upward pressure to the flange of the fixed plastic fitment, thereby deflecting this flange upwardly to initiate an upward or opening movement of the plastic stopper. Once the stopper is



raised slightly in this manner, an adult can complete the removal of the stopper with normal finger pressure.

3,690,499

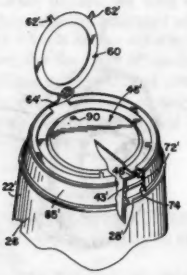
COMPOSITE CLOSURE

James E. Westfall, Western Springs; Arthur L. Lawson, Deerfield, and Peter A. Vercillo, Oak Park, all of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed July 29, 1971, Ser. No. 167,151

Int. Cl. B65g 67/02

U.S. Cl. 215—40 **6 Claims**



The disclosure relates to improvements in closures comprising a dependent skirt which encircles a container neck, and which include a pull tab attached to the skirt for removal of the closure.

Preferred embodiments disclosed relate to a composite closure consisting of a flexible, resilient plastic fitment, and a gasketed rigid closure panel. The fitment has a perforate top and dependent skirt. The closure panel is retained within the skirt. A lifting ring in the top of the flexible plastic fitment is joined to marginal portions of the fitment top by breakable bridging portions and by a substantially unbreakable integral hinge portion attached directly to a portion of the skirt. Once breakable bridging portions are broken, the semi-detached ring serves to alert shoppers that the closure has been previously tampered with or removed. The exterior face of a downwardly extending skirt of the plastic fitment is substantially straight, and the interior face includes detent means for engaging the neck of the container. The closure includes means, responsive to the lifting of the ring, for breaking a vacuum within the container before the detent means begins to clear cooperating elements on the neck.

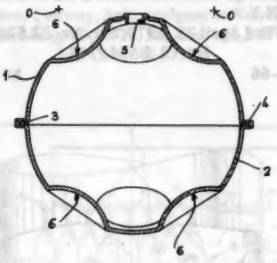
In a preferred embodiment, the closure also includes special positioning of the detent means so that no detent means are positioned on either side of the plastic fitment at a quarter circle from the hinge.

3,690,500

SPHERICAL CONTAINERS FOR PRESSURIZED FLUIDS

Roger Remane, Sainte-Colombe-Les-Vienne, France, assignor to Application Des Gaz, Paris, Seine, France

Filed Nov. 2, 1970, Ser. No. 86,221
Int. Cl. B65d ; F25j
U.S. Cl. 220—1 B 8 Claims



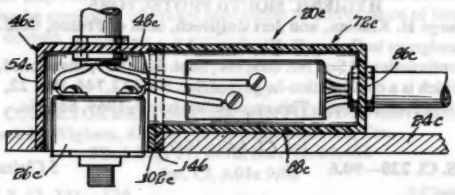
A pressurized fluid container of generally spherical shape, wherein at least one depression is provided in a wall of the container for outward expansion should the pressure within the container exceed a nominal value.

3,690,501

ELECTRICAL OUTLET BOX

Gordon K. Ware, Chicago, Ill., assignor to Ware Fuse Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 823,569, May 12, 1969, Pat. No. 3,622,029. This application Dec. 29, 1969, Ser. No. 888,258
Int. Cl. H02g *3/08*
U.S. Cl. 220—3.94 8 Claims



A box including a first portion for receiving electrical outlets, switches, cover plates and the like of standard size and a second portion connectable with the first portion for increasing the interior volume of the box for accommodating electrical wires.

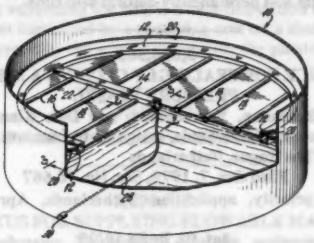
3,690,502

PIPE PONTOON FLOATING ROOF

Fred H. Guber, Jr., 44 Courter Ave., Maplewood, N.J.

Filed June 23, 1971, Ser. No. 155,809
Int. Cl. B65d *87/18*
U.S. Cl. 220—26 D 6 Claims

A floating roof for large storage tanks incorporating large diameter pipes to provide additional buoyancy and stiffening for the roof. An annular box pontoon provides a portion of the required roof buoyancy. Large diameter chordal pipes are used to stiffen the flat circular deck located inside the annular



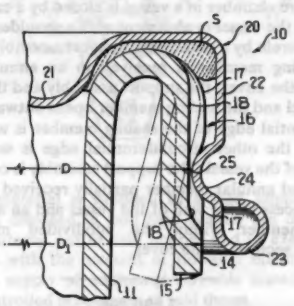
pontoon while providing additional distributed buoyancy and structural stability to said deck.

3,690,503

COMBINED CONTAINER AND CLOSURE

John J. Curry, 2926 Downing Ave., Westchester, Ill.

Filed March 5, 1970, Ser. No. 16,739
Int. Cl. B65d *41/04*
U.S. Cl. 220—39 R 17 Claims



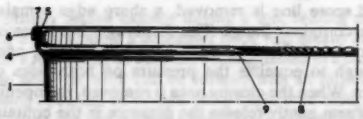
This disclosure relates to a container of thermo-formed plastic material and a metallic closure, the closure being of a conventional construction and including a plurality of inwardly directed threads, the container having a body terminating in an upper end in a radially outwardly directed shoulder terminating in a downwardly directed peripheral skirt, the latter of which includes a plurality of vertical flutes, whereby upon the snap application of the closure to the container the flutes are deformed by the screw threads forming a self-threaded closure.

3,690,504

SHEET METAL CONTAINER

Christian Ragettli, Gockhausen near Zurich, Switzerland, assignor to Van Leer (U.K.) Limited, West Byfleet Weybridge, Surrey, Great Britain

Filed Jan. 25, 1971, Ser. No. 109,110
Claims priority, application Great Britain, Jan. 26, 1970, 3,580/70
Int. Cl. B65d *41/00*
U.S. Cl. 220—42 C 5 Claims



A metal container having a lid which is secured to a top flange of the container by outward radial pressure. The lid

center panel is of frusto-conical configuration and the lid is secured to the container by axial pressure upon the center panel which forces the lid rim outwardly to tightly engage the container rim and permanently deform said rims.

3,690,505

DEVICE FOR SEALINGLY CLOSING A METAL PRESSURE VESSEL

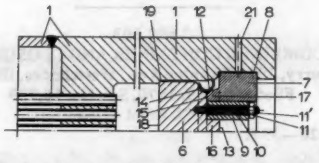
Willem Schoonman, Voorschoten, and Djin Kian Oey, Rijswijk, both of Netherlands, assignors to Lummus Nederland N.V., The Hague, Netherlands

Filed Oct. 7, 1970, Ser. No. 78,667

Claims priority, application Netherlands, Apr. 7, 1970, 7004982

Int. Cl. B65d *53/00*

U.S. Cl. 220—46 MS **6 Claims**



A pressure chamber in a vessel is closed by a cover which is recessed in the vessel in abutment with a shoulder thereof and retained therein by a detachable support assembly. A semi-toroidal sealing member is received in an annular chamber formed by the cover, the support assembly and the inner wall of the vessel and the sealing member opens outwardly and one circumferential edge of the sealing member is welded to the cover and the other circumferential edge is welded to the inner wall of the vessel. The support assembly is constituted by a subdivided annular member partially received in a circumferential recess in the wall of the vessel and an annular inner locking member within the subdivided member and detachably secured to the cover.

3,690,506

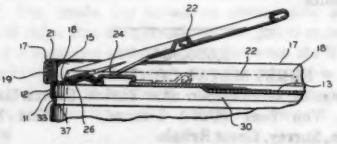
EASY OPEN CONTAINER WITH PRESSURE RELEASE AND SAFETY FEATURE

James E. Kennedy, Spanish Fort, Ala., and Melvin A. Koboldt, St. Louis, Mo., assignors to Container Corporation of America, Chicago, Ill.

Filed April 26, 1971, Ser. No. 137,453

Int. Cl. B65d *17/20*

U.S. Cl. 220—54 **4 Claims**



Surging of the granular contents of a container at a pressure greater than ambient and having an end closure provided with a weakened score line and an opening device cooperating with the closure is prevented by a diaphragm disposed below the closure and above the container contents. The container closure is of the type that when a closure area defined by a weakened score line is removed, a sharp edge remains adjacent the container flange. The diaphragm has a removable central portion defined by a weakened line having openings therethrough to equalize the pressure on both sides of the diaphragm. When the closure area is removed, the openings in the diaphragm gently release the pressure in the container to prevent surging of the granular contents. The diaphragm has a removable center section defined by the weakened line and said openings for removal of the contents. The locus of the weakened line is inboard of the sharp edge, and upon removal of the center section, the remanent portions of the diaphragm serve as a shield for the sharp edge.

3,690,507

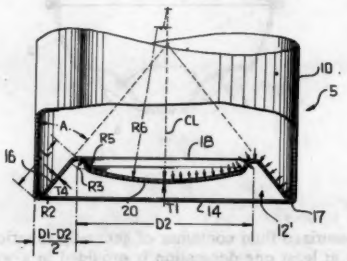
PROFILED BOTTOM WALL FOR EXTRUDED AND WALL IRONED CANS

Walter J. Gallus, Chicago, and James R. Hoenig, Tinley Park, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed April 28, 1970, Ser. No. 32,526

Int. Cl. B65d *7/42*

U.S. Cl. 220—66 **9 Claims**



A profiled bottom wall for drawn, extruded and/or wall ironed cans having improved resistance against buckling under the internal pressure of a packaged medium. The profiled bottom wall includes an annular chime projecting inwardly and upwardly from the body wall which terminates in an annular bead. The construction is such that a 50 percent increase in resistance to buckling is achieved as compared to conventional bottom walls.

3,690,508

Patent Not Issued For This Number

3,690,509

HYGIENIC MOUTH PROTECTORS

George H. Kinolan, and Jeri Zuljivech, both of Fresno, Calif., assignors to George H. Kinolan and Jerri Zuljivech

Continuation of Ser. No. 669,766, Sept. 22, 1967, abandoned, which is a continuation-in-part of Ser. No. 512,744, Dec. 22, 1965, abandoned. This application July 7, 1969, Ser. No. 845,629

Int. Cl. A47g *19/22*

U.S. Cl. 220—90.6 **5 Claims**

A container which has a dispensing opening, the immediate adjacent areas of which are often placed in contact with a human consumer's mouth, said container having a cover over said area of contact, said cover being hygienically bonded to said container to protect the area of contact from being contaminated, said cover having sufficient tear-strength to overcome said bond so that the cover can be integrally removed by

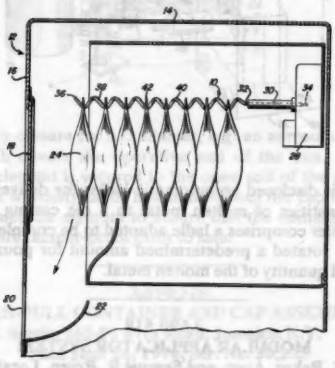
breaking the bond, e.g., by manually pulling the cover away from the container. If the particular container is metal it is often desirable to provide the container with a plastic layer which is located between the cover and the area where the user's mouth would contact the metal in order to prevent the sometimes objectionable metallic taste.

3,690,510

CONVEYING ROD FOR VENDING MACHINES

James M. Deaton, Conway, Ark., assignor to Vendmart, Inc.

Filed May 10, 1971, Ser. No. 141,587
Int. Cl. G07f 11/52
U.S. Cl. 221—75 **8 Claims**



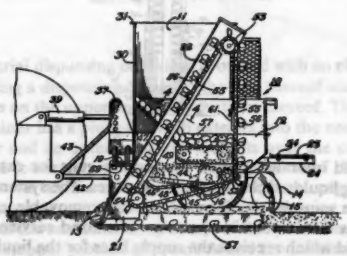
A dispensing device for articles supported thereon in the form of an elongated rod rotatably supported and driven at one end thereof with the rod being constructed in a symmetrical zig-zag or serpentine configuration to provide, in effect, a step rod utilized to hold, convey and dispense any object or product which can be supported, hung or attached thereto such as by means of a hole, hook or the like so that as the rod rotates the articles will be conveyed along the rod in a step-by-step manner and discharged from a free end of the rod with one article being discharged for each 360° of rotation thereof. The step rod has primary utility in vending machines but may also be employed wherever movement or conveyance of items is desired.

3,690,511

CONVEYOR BELT SPACER FOR POTATO PLANTERS

Jack H. Wigham, 4206 N. E. 15th St., Amarillo, Tex.

Filed Aug. 17, 1970, Ser. No. 64,402
Int. Cl. A01c 9/02
U.S. Cl. 221—174 **3 Claims**



A conveyor belt, sometimes referred to as a cell-belt, in the bottom of the bin of a potato planter having a cup conveyor chain driven by a sprocket on a cup conveyor drive shaft. The conveyor belt is intermittently advanced with seed potatoes thereon to a hopper where the seed potatoes are picked up by the regularly spaced cups on the cup conveyor chain and are thereafter deposited in a furrow in the earth. The means for intermittently advancing the belt is a cam-like action comprised of a sprocket contacted by a revolving arm on a shaft which is indirectly turned by the wheels supporting the planter.

3,690,512

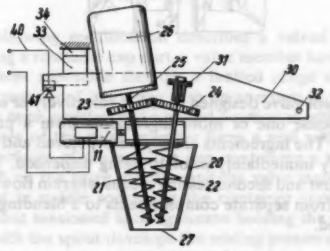
Patent Not Issued For This Number

3,690,513

APPARATUS FOR SUPPLYING FLOWABLE MATERIAL

Harald Strohmeier, Kapfenburg, Austria, assignor to Gebr. Bohler & Co. A.G., Kapfenberg, Austria

Filed Feb. 3, 1971, Ser. No. 112,376
Claims priority, application Austria, Feb. 10, 1970, 1173
Int. Cl. B67d 5/08
U.S. Cl. 222—55 **8 Claims**



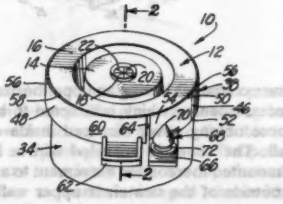
Flowable material is supplied to a feed hopper. Feeder screw means disposed in said feed hopper are operated to force said material out of said hopper and to exert a thrust which varies with the amount of flowable material in said hopper. The supply of additional flowable material to said hopper is controlled in response to said thrust.

3,690,514

INITIALLY SEALED CLOSURES WITH SEALING STRUCTURES

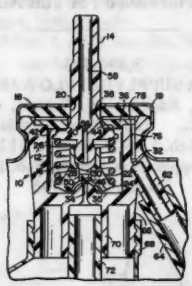
Woodrow S. Wilson, Slatersville, R.I., assignor to Polytox Corporation, Slatersville, R.I.

Filed Aug. 24, 1970, Ser. No. 66,263
Int. Cl. B67b 7/24
U.S. Cl. 222—81 **5 Claims**



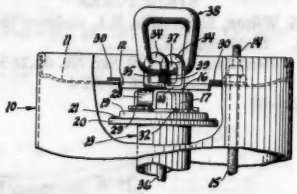
An initially sealed closure having a top, sealing means for forming a seal against a container neck and means for engaging such a neck so as to hold the sealing means in a sealed relationship with the neck can be formed with an initially sealed dispensing opening, an integral strap capable of being partially severed from the closure and a subclosure carried by the strap. With this structure the strap can be partially broken away from the remainder of the closure so that the subclosure can be used to close the opening.

3,690,515
CO-DISPENSING VALVE
Ronald F. Ewald, Rolling Meadows, Fla., assignor to Seaquist Valve Company, Division of Pittway Corp., Cary, Ill.
Filed Dec. 16, 1970, Ser. No. 98,684
Int. Cl. B65d 83/14
U.S. Cl. 222—136 13 Claims



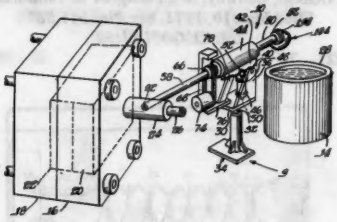
An aerosol valve designed to either selectively or simultaneously dispense one or more ingredients from a pressurized container. The ingredients are separately stored and are intermixed only immediately prior to being dispensed. The valve includes first and second sealing means wherein flow of the ingredients from separate compartments to a blending chamber is regulated.

3,690,516
COMBINATION CAP AND PUMP FOR SPRAYER APPARATUS
Vincent Santarelli, 27551 Gail, Warren, Mich.
Filed Dec. 4, 1970, Ser. No. 95,177
Int. Cl. B67d 5/40
U.S. Cl. 222—340 6 Claims



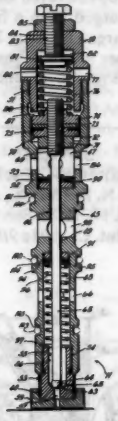
A pressure container having an upper horizontal wall and an oblong access opening which is adapted to be enclosed by a dual-purpose oblong cover disposed inside of the container upper wall. The cover is provided with a locking member pivotally mounted thereon for movement to a locking position with the outside of the container upper wall, and for movement to an unlocked position to release the cover for removal from the container. A pump is attached to the inner side of the cover and it is provided with a piston rod which extends outwardly through the cover and a pump operating handle is attached to the outer end of the piston rod. A retaining means is carried on the locking member for retaining the pump handle in a position locked against axial movement, whereby the pump handle may be used to rotate the locking member between the locking position and the unlocked position when the pump is not being used.

3,690,517
AUTOMATIC LADLER
Richard J. Ott, Baroda, Mich., assignor to Respond Inc., Baroda, Mich.
Continuation-in-part of Ser. No. 725,466, April 30, 1968, Pat. No. 3,556,354. This application Dec. 15, 1969, Ser. No. 885,232
Int. Cl. B22d 41/04
U.S. Cl. 222—358 7 Claims



There is disclosed an automatic ladler for delivering measured quantities of molten metal to a die casting machine, which ladler comprises a ladle adapted to be completely filled and then rotated a predetermined amount for pouring out a measured quantity of the molten metal.

3,690,518
MODULAR APPLICATOR SYSTEM
Robert G. Baker, Avon, and Samuel R. Rosen, Lorain, both of Ohio, assignors to Nordson Corporation, Amherst, Ohio
Continuation-in-part of Ser. No. 776,177, Nov. 15, 1968, Pat. No. 3,570,725. This application Nov. 13, 1970, Ser. No. 89,381
Int. Cl. G01f 11/06
U.S. Cl. 222—504 27 Claims



A fluid operated system of modular guns for extruding or spraying liquids such as molten adhesives. The system includes multiple guns in the form of readily removable cylindrical modules that mount in apertures of a fixed service block or manifold which receives the supply lines for the liquid and the gun operating pressurized fluid. The service block and guns have passages which register when the system is assembled whereby the guns may be easily removed from the fixed service block and replaced without disconnecting any fluid lines or other service equipment.

3,690,519

CLOSURES FOR CONTAINERS

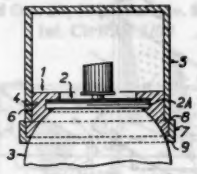
Victor Wassilieff, 84, Rue de l'Assomption 75, Paris, France

Filed Jan. 12, 1970, Ser. No. 2,061

Claims priority, application France, Jan. 24, 1969, 6901450; Sept. 16, 1969, 6931454

Int. Cl. B65d *83/14*

U.S. Cl. 222—402.13 26 Claims



A safety closure for a container, e.g. an aerosol can, has a cap which covers the operative end of the can. An intermediate element is secured to the open end of the can and a breakable warranty tie or link immobilises the cap relative to the intermediate element to ensure that the container and its contents are tamper-proof prior to sale.

3,690,520

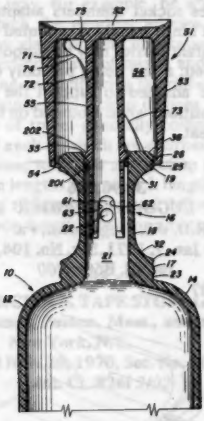
PUSH-PULL CONTAINER AND CAP ASSEMBLY

Samuel E. Sarris, 162-01 87th Road, Jamaica, N.Y.

Filed June 26, 1970, Ser. No. 50,225

Int. Cl. B65d *25/40*

U.S. Cl. 222—499 22 Claims



A material dispensing container provided with an elongated neck having a dispensing orifice in the side thereof and engaging means on the upper and lower portions thereof. The cap of the container has a plunger which extends into the neck of the container and an outer portion which fits over the container neck. The lower extremity of the outer portion of the cap is provided with an inwardly extending peripheral engaging lip which cooperates with the upper and lower engaging means of the neck of the container in open and closed positions, respectively. The upper portion of the neck and the interior surface of the cap are provided with male and female parts which cooperate with each other to guide the cap, in movement between closed and open positions in a twistingly axial path, thereby facilitating release of the cap lip from the lower engaging means.

3,690,521

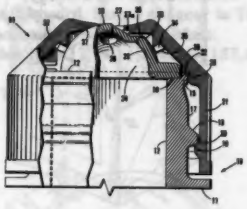
CONTAINER INCLUDING A ROTATABLE SPHERICAL VALVE WITH RING DRIVER GEAR TEETH

Edward B. Middleton, 245 Forest Hill Drive, Kitchener, Ontario, Canada

Continuation-in-part of Ser. Nos. 35,673, May 8, 1970, and Ser. No. 133,180, April 12, 1971. This application May 28, 1971, Ser. No. 147,890

Int. Cl. B67d *3/02*

U.S. Cl. 222—507 7 Claims



The following specification describes a valved container comprising a rotatable cap part, a valve member having spherical surfaces moveable through a limited range of rotation between registry of its orifice with an aperture in the cap to define an open position and a closed position at which spherical surfaces of the valve member form a seal with concave sealing surfaces of the cap, the cap containing a ring driver gear teeth on the valve member and the valve member being supported in saddle sockets in the container spout in such manner that tensioned locking means holding the cap in assembly with the spout develops the sealing pressure required, the components being adapted for automatic assembly in the inverted position.

3,690,522

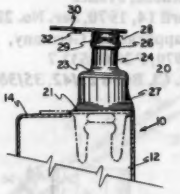
CONTAINER WITH RECLOSEABLE, COLLAPSIBLE POURING SPOUT

Walter K. Chlystun, 327 St. James Drive, Spartanburg, S.C.

Filed Oct. 15, 1970, Ser. No. 81,074

Int. Cl. B67d *3/00*

U.S. Cl. 222—529 11 Claims

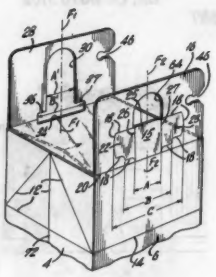


A container is disclosed having a collapsible pouring spout in the top portion thereof. The pouring spout may be separate from or integral with the top wall and is collapsible to a nested position through an opening in the top wall. The pouring spout has a cover means associated with the top thereof and the cover means has a member integral therewith that is removably secured to a portion of the pouring spout. A weakened tear line around the integral member permits the cover to be torn away from the top of the pouring spout at the end of the movement of the spout as it is being withdrawn to its extended position. After severing of the cover from the pouring spout, the member integral with the cover means now provides a member for friction or snapping engagement with the top of the pouring spout so as to facilitate reclosing thereof. Also, a container is disclosed having a separate withdrawal means and cover means.

3,690,523
CONTAINER FOR FLOWABLE CONTENTS

Martin Link, North Brunswick, N.J., assignor to Johnson & Johnson

Filed June 3, 1971, Ser. No. 149,676
Int. Cl. B67d 3/00; B65d 5/10, 5/46
U.S. Cl. 222—538 7 Claims

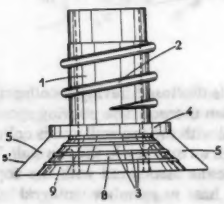


A container for transporting and administering flowable contents is provided with a closure comprising two panels and a closure device for positively locking the panels together. The closure device comprises an aperture having a narrow and a wide section in a first panel and an aperture-cooperating tab, hinged to a second panel. The dimensions of the tab are scaled, relative to the dimensions of the aperture, to provide the positive locking feature of this invention. The container is further provided with means for readily observing the contents level therein without the necessity for opening the closure device, these means comprising viewing orifices in one sidewall and light-admitting orifices in an opposing sidewall to provide a satisfactory level-viewing background, these orifices being so oriented on each of the respective sidewalls as to preclude substantial weakening thereof.

3,690,524
MOUTHPIECE FOR A PLASTICS MATERIAL BAG, PACKET, RECEPTACLE SACHET OR THE LIKE

Karl Haberhauer, Grunstadt, Germany, assignor to Thimonnier & Cie, Lyon, Rhone, France

Filed April 14, 1970, Ser. No. 28,455
Claims priority, application Germany, Apr. 26, 1972, P 19 21 349.1; Jan. 7, 1970, P 20 00 532.7
Int. Cl. B65d 25/42, 35/38
U.S. Cl. 222—573 8 Claims

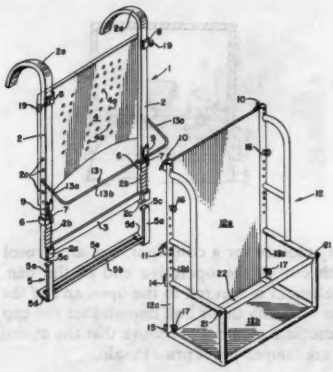


A mouthpiece for dispensing the contents of a container, made from heat-sealable plastic sheet material, has a tubular body divided by a peripheral collar into an upper and a lower portion. The lower portion, which may be cylindrical or frustoconically diverging, carries a pair of diametrically opposite wings whose outer lateral edges diverge downwardly from the periphery of the cells so as to define a trapezoidal outline.

3,690,525
SUPPORT FRAME FOR USE WITH AN INFANT'S CAR SEAT-BED ASSEMBLY OR AS A SHOULDER SUPPORTED PACK CARRIER

Albert Eugene Koons, Proctor Star Route, Williamsport, Pa.

Filed Dec. 23, 1970, Ser. No. 101,043
Int. Cl. A46f 4/02
U.S. Cl. 224—9 11 Claims

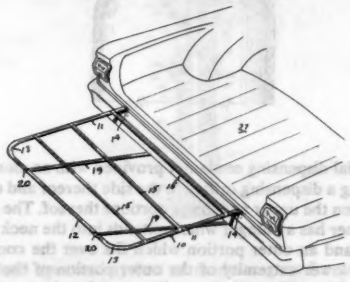


A support frame for use with an infant's car seat-bed assembly or as a shoulder supported pack carrier, the support frame including hook portions at one end thereof adapted to engage the upper edge portion of the back of a car seat when used with an infant's car seat-bed assembly, or on the shoulders of a person when used as a pack carrier; the opposite end of the frame having a detachable hook member adapted to engage the lower edge portion of the back of a car seat, the frame also includes socket members adapted to selectively receive portions of hinge members mounted on an infant carrier whereby the infant carrier may be supported on the frame as a seat or as a bed; a bail being pivotally connected to the support frame and adapted to support the infant carrier in various inclined positions when mounted on the support frame as an infant's car seat.

3,690,526
LUGGAGE CARRIER

Albert A. Rundel, R.D. #1, Saegertown, Pa.

Filed Jan. 7, 1971, Ser. No. 104,707
Int. Cl. B60r 9/00
U.S. Cl. 224—42.07 3 Claims



The specification discloses a luggage carrier made up of a generally U-shaped frame. The frame has two spaced legs with a hook on the front which hooks over the bumper of an automobile. Two braces are attached to the cross member of the U-shaped member and the front portion of the braces is received on fastening means welded to the under side of the car frame. The cross members provide a supporting surface

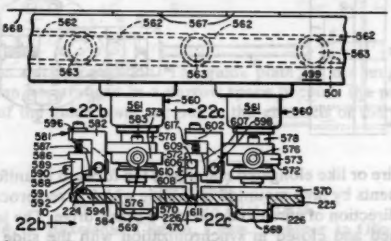
for carrying articles, boats and the like. A platform may be supported on the frame.

3,690,527

ARTICLE HANDLING APPARATUS AND METHOD

Daniel J. Bustraan, 273 Orchard Drive, Big Flats, N.Y.; Mijo A. Gossie, 216 Seneca Street; Roy N. Sundstrom, 18 Upper Drive, both of Corning, N.Y., and William R. Wisner, 413 Antler Road, Big Flats, N.Y.

Filed Oct. 20, 1970, Ser. No. 82,466
Int. Cl. B26f *3/00*
U.S. Cl. 225—4 **10 Claims**



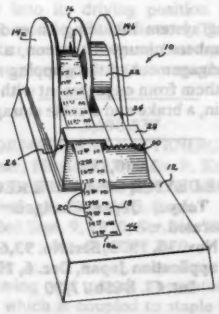
A substantially continuous ribbon of a thermoplastic material supporting a plurality of depending and equally spaced-apart articles or bodies and moving in a generally linear direction through a first path of travel at a relatively high rate of speed is periodically fractured at equally spaced-apart points along the length thereof to successively provide a series or succession of ribbon lengths each supporting an equal number of the pendent articles, and successive ones of the ribbon lengths are handled and delivered to ribbon-length receiving and transfer means without contacting any of the pendent articles or bodies of such ribbon lengths. The thermoplastic ribbon may, for example, be a ribbon of a glassy material from which the pendent articles or bodies are integrally formed by glass forming apparatus while the ribbon moves through said first path of travel, and the apparatus for fracturing, handling and delivering the ribbon lengths includes a plurality of ribbon-length pickup devices which are located in a second path of travel generally collinear with said first path of travel and each of which are alternately moved and actuated by cam means to follow and pickup successive ones of the moving ribbon lengths, move each length into clearance of the next following ribbon length, and deliver each picked-up length to said ribbon-length receiving and transfer means.

3,690,528

WATCHCLOCK TAPE STORAGE UNIT

Richard J. O'Connor, Paxton, Mass., assignor to Pinkerton's Incorporated, New York, N.Y.

Filed Nov. 20, 1970, Ser. No. 91,483
Int. Cl. B26f *3/02*
U.S. Cl. 225—37 **9 Claims**



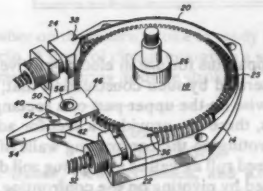
An apparatus for storing marked watchclock tapes for subsequent inspection and verification. The marked tapes are spooled onto a watchclock tape storage reel that is removably and rotatably held in the storage apparatus. The free end of the spooled watchclock tape is frictionally held to prevent inadvertant unwinding of the tape. A roll of pressure sensitive, adhesively coated tape is removably and rotatably held in the storage unit in side-by-side relationship with the watchclock tape storage reel. A serrated edged surface is provided for storage of the free end of the adhesively coated tape.

3,690,529

CABLE DRIVE ASSEMBLY

Robert J. Prest, Concord, Mass., assignor to Technical Operations, Incorporated, Burlington, Mass.

Filed June 11, 1971, Ser. No. 153,476
Int. Cl. B66d *1/76*
U.S. Cl. 226—76 **20 Claims**



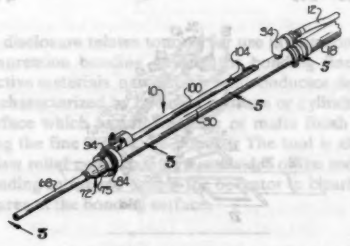
A cable drive assembly for driving a cable of the type having a helical wire winding includes a replaceable guide and wear strip which is captured by and between a pair of like half-housing members. A pair of bushings, also captured between the half-housing members, secure the ends of the wear strip. A novel drag brake assembly is also disclosed.

3,690,530

YARN HANDLING APPARATUS

William D. Porter, Asheville, N.C., assignor to Northrop Carolina, Inc., Asheville, N.C.

Filed May 3, 1971, Ser. No. 139,663
Int. Cl. B65h *17/32*
U.S. Cl. 226—97 **10 Claims**

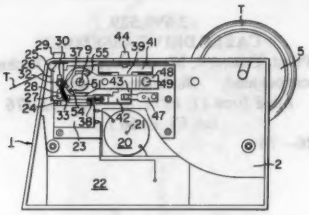


A manually operable yarn handling apparatus adapted to initially pick up a running length of yarn and then pull the same at high speed and high tension. The apparatus includes a nozzle tube having an open forward end adapted to aspirate the yarn end thereinto, and an outlet tube coaxially aligned with the rear end of the nozzle tube to define an annular orifice therebetween. An air supply arrangement is provided for directing pressurized air through the orifice to create a suction in the nozzle tube, and means is provided for manually varying the spacing between the nozzle tube and outlet tube between a first position designed to aspirate the yarn end and a second position designed to tension the yarn.

3,690,531
TAPE FEED APPARATUS FOR USE IN ELECTRO-MOTIVE TAPE CUTTER

Satoshi Tanigami, Tokyo, Japan, assignor to Elm Industry Co., Ltd., Tokyo, Japan

Filed July 1, 1971, Ser. No. 158,913
Claims priority, application Japan, July 25, 1970, 45/64735
Int. Cl. B65h 17/26
U.S. Cl. 226—136 6 Claims

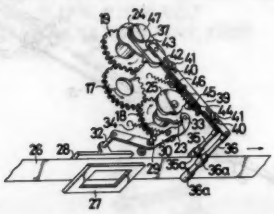


A tape feed apparatus for use in electro-motive tape cutter which is characterized by such construction that; in the dent provided lengthwise on the upper part of a rectangular casing of the apparatus, there are provided a reel for adhesive tape supported by pivoting on the confronting walls of one end of said dent and a feed roll as well as a stripping roll disposed in a row and supported by pivoting on the confronting walls of the other end of said dent so as to make these rolls rotate simultaneously by means of a motor equipped within the casing; a tape adjusting roll is disposed above said stripping roll so as to make it move vertically; and, a pressing segment which functions to switch on or off the motor in concert with the vertical motion of the stripping roll is mounted on the wall of the casing so as to be vertically movable.

3,690,532
DEVICE FOR INTERMITTENTLY TRANSPORTING ROLL FILM

Kaoru Umeda, Osaka; Kenjiro Ishii, Kanagawa, and Hiroshi Endo, Tokyo, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed April 12, 1971, Ser. No. 133,062
Claims priority, application Japan, April 16, 1970, 45/37280; May 20, 1970, 45/43578
Int. Cl. B65h 17/36
U.S. Cl. 226—149 4 Claims

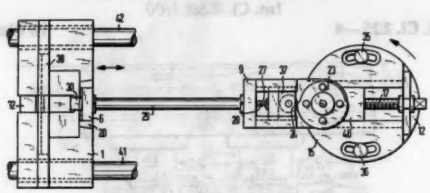


A device comprises a pressure plate for pressing the roll film against an apertured plate under the control of a first cam to be driven in operative relationship with the rotation of drive means, clamp and transport members at least one of which is operated by a second cam to be driven in operative relationship with the first cam to clamp the roll film and which advance the film by a predetermined amount under the control of a third cam to be driven in similar operative relationship, and a mechanism for effecting a single turn of rotation for driving and stopping the first, second and third cams for every single frame transport of the film. The shape and timing of action of the first, second and third cams are so determined that the roll film is automatically advanced by only one frame when it is released from the pressure plate.

3,690,533
FEEDING APPARATUS FOR WIRE AND LIKE ELONGATED MATERIAL

Otto Bihler, Halblech-Fussen, Germany, assignor to Otto Bihler KG, Halblech-Fussen, Germany

Filed July 1, 1971, Ser. No. 158,694
Claims priority, application Germany, July 8, 1970, P 20 33 940.6
Int. Cl. B65h 17/36
U.S. Cl. 226—165 9 Claims

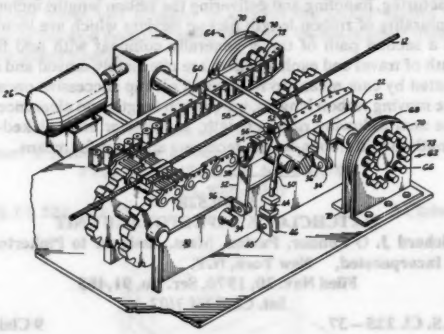


Wire or like elongated material is fed forward in uniform increments by jaws mounted on a slide which is reciprocated in the direction of wire elongation by a crank drive. The jaws are opened and closed in synchronization with the slide movement by an operating member longitudinally slidable in the hollow connecting rod of the crank drive and carrying a cam follower which engages a radial cam fixed on the crank pin of the drive. Movement of the operating member is transmitted to one of the jaws by a wedge-shaped cam on the operating member engaging a cam follower on the movable jaw.

3,690,534
CABLE HANDLING SYSTEM

Jules N. Biron, 82903 Sharpview, Houston, Tex.

Filed Sept. 22, 1969, Ser. No. 859,641
Int. Cl. B65h 17/34
U.S. Cl. 226—172 13 Claims



A cable handling system including an endless chain with cable gripping members mounted thereon, a cam to engage and maintain the engagement of the gripping members with a cable, and release them from engagement with a cable, a drive for the endless chain, a brake and a cable storage bin.

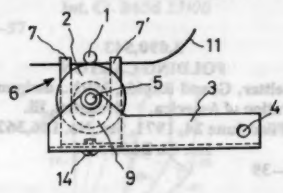
3,690,535
TAPE GUIDE DEVICE OF A TAPE RECORDER

Niro Nakamichi, Tokyo, Japan, assignor to Nakamichi Research Incorporated

Filed Nov. 30, 1970, Ser. No. 93,656
Claims priority, application Japan, Dec. 6, 1969, 44/116181
Int. Cl. B65h 17/20
U.S. Cl. 226—190 5 Claims

This invention relates to the tape guide device of a tape recorder; wherein the pinch roller is provided with two chan-

nels in its side face, the distance between said two channels being wider rather than the width of the magnetic tape, projections of said guide plate are put in said channels and the top ends of said projections keep the magnetic tape in the normal



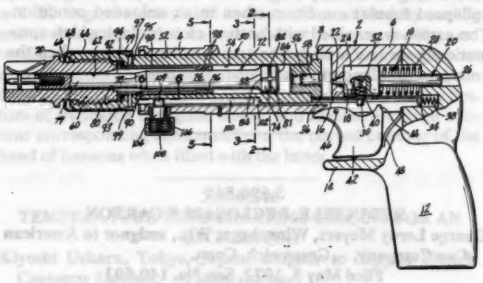
position during operation. The guide plate for the magnetic tape can be arranged in a narrow space because the projections of the guide plate are put in the channels of the pinch roller.

3,690,536

POWDER-ACTUATED TOOL

Andrew G. Bakoledis, Clinton, Conn., assignor to Olin Corporation

Filed Dec. 7, 1970, Ser. No. 95,620
Int. Cl. B25c *1/14*
U.S. Cl. 227—10 **11 Claims**



A power-actuated fastening tool of the type for driving fasteners by a propellant charge wherein a fastener driving member has an enlarged head portion. The head portion is so designed that a portion of the gases generated by the propellant charge may bleed from the rearward side to the forward side thereof to reduce recoil and buffer the fastener driving member. In addition, a specially designed piston member is provided for driving threaded fasteners wherein the piston has a bore extending into its forward end with the innermost portion of the bore being defined by a conical wall. The tool is so designed that power adjustment is obtained by positioning the piston member into its driving position by insertion of a fastener into the muzzle end of the tool. The barrel guide slot and pawl member are so designed that upon opening of the tool, there will be planar contact between the two members.

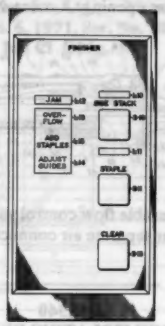
3,690,537

STAPLE FORMING AND FASTENING APPARATUS

Lyman H. Turner, Pittsford; William P. Kukucka, Henrietta, and James E. Summers, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sept. 9, 1970, Ser. No. 70,735
Int. Cl. B27f *7/10*
U.S. Cl. 227—88 **4 Claims**

A staple forming and punch apparatus incorporating a punch member which is coupled to staple forming members for a predetermined interval during a drive stroke of the punch member which is then uncoupled to drive the formed staple into a work piece. A staple feed finger is associated with the punch member to feed another staple into the path of the



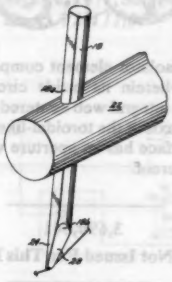
punch member on the return stroke to ready the apparatus for another cycle. A control circuit energizes a solenoid to power the punch member during its drive stroke.

3,690,538

BONDING TOOL

Edward L. Gaiser, Newport Beach, and Kenneth W. Ellett, Fountain View, both of Calif., assignors to Gaiser Tool Company, Santa Ana, Calif.

Filed Feb. 25, 1970, Ser. No. 13,869
Int. Cl. B23k *21/00*; B23p *3/02*
U.S. Cl. 228—3 **6 Claims**



This disclosure relates to tools for use in ultrasonic or thermocompression bonding devices for bonding fine wires on conductive materials, particularly semiconductor devices.

It is characterized by having a concave or cylindrical bonding surface which has an irregular or matte finish for firmly gripping the fine wire to be bonded. The tool is also formed with view relief cutouts on opposite sides of the tool adjacent the bonding surface to enable the operator to clearly view the target area at the bonding surface.

3,690,539

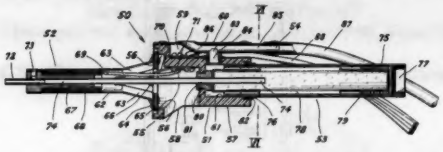
HEAT AND AIR ACTION APPARATUS FOR ELECTRONIC CIRCUITRY REPAIRS

Joseph A. Geiger, 7258 Parkwood Court, Falls Church, Va.

Filed Sept. 25, 1970, Ser. No. 75,319
Int. Cl. B23k *1/00, 5/22*
U.S. Cl. 228—20 **32 Claims**

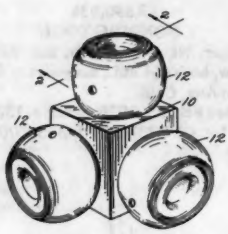
A heat and air action apparatus for repairs on electronic circuitry capable of melting solder connections and of vacuum-collecting or air-jet-dispersing the melted solder or other air-entrainable matter, the apparatus including, in axial alignment, a heater, a central hub, and a barrel with an air connection. An air conduit links the hollow heater tip to the air connection, the conduit including solid-matter-separating means

in the form of either a trajectory trap or a container-shaped filter body, or both, arranged inside the barrel. The air connection is preferably at the hub-side of the barrel, including a finger-closable bypass opening. A more versatile embodiment



includes a finger-operable flow control valve for either a single air connection, or for separate air connections for vacuum and for pressure.

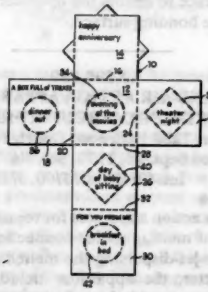
3,690,540
SHOCK ISOLATING DEVICE
James S. Hardigg, P.O. Box 89, Conway, Mass.
Filed Feb. 5, 1970, Ser. No. 9,017
Int. Cl. B65d 25/12
U.S. Cl. 229—14 **21 Claims**



A plastic shock isolator element composed of a hollow toroidal-like body wherein its inside circumferential surface merges into a solid integral web centered upon and extending transversely to the axis of the toroidal-like body and its outside circumferential surface has an aperture which communicates with the interior thereof.

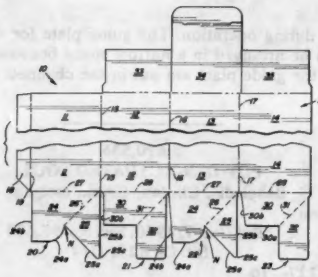
3,690,541
Patent Not Issued For This Number

3,690,542
SIMULATED CONTAINER
Hans E. I. Jernstrom, 1635 Ferndale, Northbrook, Ill.
Filed Oct. 20, 1970, Ser. No. 82,340
Int. Cl. B65d 5/00
U.S. Cl. 229—30 **10 Claims**



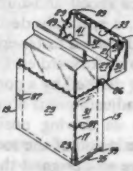
A simulated gift box comprising a plurality of connected panels assembleable to form a simulated container, each panel of the simulated container having at the inside thereof indicia indicating a surprise reward and easily separable reward certificate.

3,690,543
FOLDING CARTON
Charles R. Zeitter, Grand Rapids, Mich., assignor to Packaging Corporation of America, Evanston, Ill.
Filed June 24, 1971, Ser. No. 156,362
Int. Cl. B65d 5/10
U.S. Cl. 229—39 **13 Claims**



A folding carton is provided which is adapted to assume a collapsed tubular condition when in an unloaded condition. The carton is provided with bottom closure flaps which automatically assume a closed bottom-forming position when the collapsed tubular carton is set up for loading.

3,690,544
REDUCIBLE, RECLOSABLE CARTON
George Leroy Meyers, Winnebago, Wis., assignor to American Can Company, Greenwich, Conn.
Filed May 5, 1971, Ser. No. 140,503
Int. Cl. B65d 17/00
U.S. Cl. 229—51 TC **8 Claims**



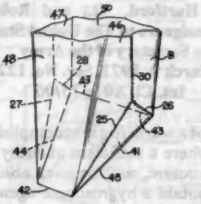
A reducible, reclosable carton blank which includes a tear-out portion extending across the top section of the front and side panels. After removal of this portion, the carton is reclosable at substantially reduced height, the top section of the rear panel now forming the new top wall and the original top wall now extending downward in overlapping relation to the front wall. The particular conformation of the tear-out portion results in a pair of male locking studs at the top wall front corners, which co-act with a pair of double, parallel slits running across the score lines between the front panel and two side panels. The slits form a push-in-step type of female locking slot.

3,690,545

CONTOUR BOTTOM BAG

Thomas E. Piazze, Mount Vernon, Ohio, assignor to Continental Can Company, Inc., New York, N.Y.

Filed Nov. 27, 1970, Ser. No. 93,078
Int. Cl. B65d *33/00*
U.S. Cl. 229—57 6 Claims



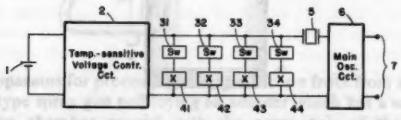
A side sealed bag particularly adapted for packaging a hand of bananas and a method of fabricating the same wherein a web of flexible heat sealable plastic film material is provided with a longitudinal gusset fold in which one of the inner faces of the gusset fold portion has a dimension transversely of the web which is substantially less than the corresponding dimension of the face of the oppositely disposed fold, the opposed faces of the fold portion are treated to prevent them from sealing to each other during the forming of bottom seams, the bottom seams or seals of adjacent bag sections are made by successive application of a V-shaped sealing and severing knife operating at spaced intervals along the folded web portion, and the bags are completed in flattened condition by sealing and severing the folded web on successive transverse lines extending across the web from the apex of each V-shaped cutout resulting from the application of the V-shaped bottom seam forming knife. The resultant bags, when opened up have a bottom of truncated triangular shape, and assume a curved contour corresponding substantially to the curved contour of the hand of bananas when filled with the latter.

3,690,546

TEMPERATURE COMPENSATING CIRCUIT FOR AN OSCILLATOR

Kiyoshi Uehara, Tokyo, Japan, assignor to Nippon Electric Company Limited, Tokyo, Japan

Filed Jan. 6, 1971, Ser. No. 104,450
Claims priority, application Japan, Jan. 13, 1970, 45/4165
Int. Cl. H03b *5/32*
U.S. Cl. 331—176 10 Claims



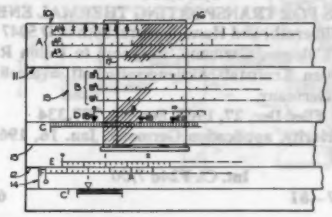
An automatic frequency control for a crystal tuned oscillator, comprising temperature sensitive means producing an output voltage varying in magnitude over a predetermined environmental frequency range, a crystal oscillator activated by the temperature means varying output voltage to provide a corresponding output frequency deviation over the predetermined environmental frequency range, and series diodes and capacitors or inductors to compensate for the oscillator output frequency deviation, wherein the diodes are biassed to OFF states by different amounts of voltage to disconnect the capacitors or inductors from the crystal when the temperature means output voltage is less than the biasing voltage smallest amount and further wherein the diodes are activated in turn to ON states to connect the capacitors or inductors in turn with the crystal to maintain the oscillator output frequency deviation at substantially zero value over the predetermined environmental frequency range.

3,690,547

CALCULATING DEVICE

Stuart Eadon-Allen, Birmingham, England, assignor to Dolland and Aitchison Services Ltd., Birmingham, England

Filed Oct. 6, 1971, Ser. No. 187,019
Int. Cl. G06g *1/02*
U.S. Cl. 235—70 R 12 Claims



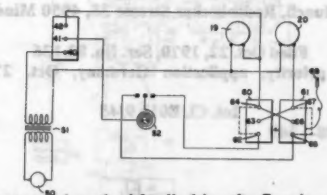
A device for calculating the thickness of a blank which is required to make an optical lens of specified characteristics. The device provides for the specification of the front and back surface powers of the lens, the minimum thickness allowable in the finished lens, the effect of prism and the correction in the effective power due to the center thickness of a convex lens, each for a specified diameter of lens. The device may take either of two forms, a linear sliding calculator or a rotary disc calculator.

3,690,548

AIR DISTRIBUTION CONTROL

John C. McNabney, La Crosse, Wis., assignor to The Trane Company, La Crosse, Wis.

Continuation-in-part of Ser. No. 86,661, Nov. 4, 1970. This application March 16, 1971, Ser. No. 124,732
Int. Cl. F24f *11/06*
U.S. Cl. 236—1 C 7 Claims



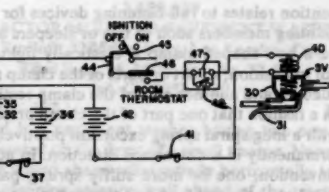
An apparatus and method for limiting the flow in a variable air volume distribution system in which a sensed differential pressure provides a signal to increase or decrease air flow. Further circuitry is provided to allow the flow limiting means to properly function with seasonal changeovers.

3,690,549

AUXILIARY HEATING SYSTEM FOR AUTOMOTIVE VEHICLES

Warren Frank Hardy, 9609 Dixie Highway, Louisville, Ky.

Filed Jan. 27, 1971, Ser. No. 110,142
Int. Cl. B60h *1/14*
U.S. Cl. 237—2 A 6 Claims



An auxiliary heating system, composed of an auxiliary heater and automatic controls, is operatively mounted in an

automobile to heat the interior of the car and to maintain it at a predetermined above-freezing subnormal temperature of say 40° F. during engine shut-off periods in cold weather when the ambient temperature is at or below said predetermined temperature.

3,690,550

PROCESS FOR TRANSPORTING THERMAL ENERGY

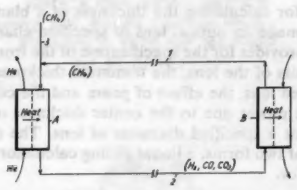
Friedrich Hilberath, and Hans Teggers, both of D 5047 Wesseling near Cologne, Germany, assignors to Union Reinische Braunkohlen Kraftstaff Aktiengesellschaft, Wesseling near Cologne, Germany

Filed Dec. 27, 1968, Ser. No. 787,334

Claims priority, application Germany, Jan. 16, 1968, P 16 92 253.5

Int. Cl. F24d 7/00

U.S. Cl. 237—81 6 Claims



Process for transporting thermal energy from the place where it is produced to the place where it is required for use by catalytic reforming of methane or natural gas, transporting the thus obtained gas mixture after cooling through pipe lines to the place where the energy is required for use, catalytically methanizing the gas mixture into methane and utilizing the heat liberated during this reaction in the manner required.

3,690,551

RAIL-FASTENING DEVICES

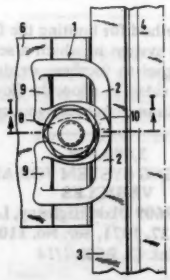
Wilhelm Munch, Rodenbecker Strasse 35, 4950 Minden, Germany

Filed Oct. 22, 1970, Ser. No. 83,136

Claims priority, application Germany, Oct. 27, 1969, 19540080

Int. Cl. E01b 9/48

U.S. Cl. 238—349 6 Claims



This invention relates to rail-fastening devices for fastening rails to mounting members such as ties or sleepers and of the kind where a bow-shaped clamp is elastically tightenable to hold the rail in position, a part or parts of the clamp resting on the tie or sleeper and another part of the clamp resting on the rail in such a fashion that one part of the clamp presses on the rail foot with a long spiral spring excursion positively to press the rail permanently in a downward direction. In accordance with the invention, one or more stiffly sprung parts of the clamp project over the rail foot and this part or parts on contacting the rail foot or on contacting other parts of the clamp that presses down the rail foot in a positive manner with a long spring excursion, forms not only an elastic limitation of the tightening excursion against plastification of the clamp but also a stiffly sprung resistance to lifting and tilting movement of the rail.

3,690,552

FOG DISPERSAL

Ralph E. Plump, Hartford, Vt., and Robert M. Backiel, Richmond, Va., assignors to The United States of America as represented by the Secretary of the Army

Filed March 9, 1971, Ser. No. 122,500

Int. Cl. A01g 15/00

U.S. Cl. 239—2 R 8 Claims

The destruction of a warm fog is accomplished by dispersing through the atmosphere a sufficient quantity of low moisture, cellulose fibrous structure, such as small absorbent paper section, which may contain a hygroscopic agent, said structures functioning to absorb moisture and to collect water droplets as they descend through the atmosphere at a speed of not more than 4.0 feet per second.

3,690,553

Patent Not Issued For This Number

3,690,554

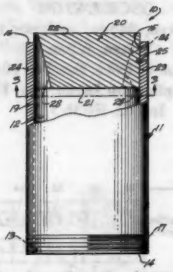
MULTI-TIER FOUNTAIN NOZZLE

John O. Hruby, Jr., Burbank, Calif., assignor to Rain Jet Corporation, Burbank, Calif.

Continuation-in-part of Ser. Nos. 32,333, April 27, 1970, abandoned, and Ser. No. 78,117, Oct. 5, 1970, Pat. No. 3,645,449, which is a continuation-in-part of Ser. No. 784,541, Dec. 9, 1968, Pat. No. 3,558,053, Continuation-in-part of Ser. No. 691,111, Dec. 8, 1967, abandoned, Continuation-in-part of Ser. No. 492,389, Oct. 4, 1965, abandoned. This application Dec. 30, 1970, Ser. No. 102,757

Int. Cl. B05b 17/08

U.S. Cl. 239—17 33 Claims



An ornamental fountain nozzle has no moving parts and includes a hollow body defining an internal chamber having a liquid inlet at one end thereof and an outlet opening at its opposite end. The communication between the chamber and the outlet end of the body is via grooves formed in a plug disposed across the outlet end of the body and having substantial length between its opposite end surfaces. The net area available for water flow out of the nozzle through the grooves is less than the area of the liquid inlet to the chamber.

3,690,555

HYGIENIC UNIT

Russell D. Johnson, 8912 Haskell, Sepulveda, Calif.

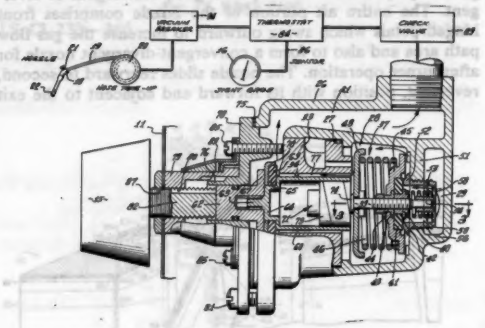
Filed Jan. 27, 1971, Ser. No. 110,125

Int. Cl. B05b 7/00

U.S. Cl. 239—61 2 Claims

A hygienic unit is provided for delivering water at a controlled temperature to a nozzle which provides a jet or stream

of water which can be applied by a person for cleansing or sanitary purposes to any part, organ, or cavity of the body. The unit includes a manual adjusting knob for initially setting a thermostatic motor which cooperates with a valve assembly for controlling a flow of hot water for mixing with a flow of



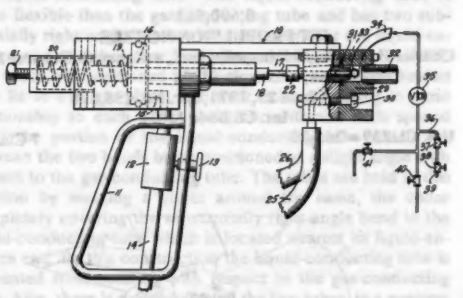
cold water such as to provide a mixed flow of water having a selected temperature. The thermostatic motor then provides for repositioning the valve assembly as required to maintain the selected temperature of the mixed water being delivered by the hygienic unit.

3,690,556

COMBINED FROTH-POUR SPRAY SYSTEM FOR RESIN FOAMS

Samuel B. McCain, Bothell, Wash., assignor to Vertecs Corporation, Inc., Kirkland, Wash.

Filed Dec. 7, 1970, Ser. No. 95,439
Int. Cl. B05b *15/02*
U.S. Cl. 239—112 **3 Claims**



Apparatus for processing an organic resin froth from an airless-type spray gun employing an adapter which has a second mixing chamber coaxial with the spray axis of the gun, together with means for selectively introducing either a pressurized mixture of a physical blowing agent to create a froth from the material issuing from the spray gun or a solvent for cleaning the second mixing chamber at the conclusion of the spraying operation.

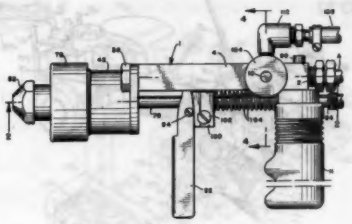
3,690,557

PLASTIC FOAM SPRAY GUN WITH SUBSTANTIALLY INSTANTANEOUS CLEANING FEATURE

James H. Higgins, 703 Meadow Dr., Burkburnett, Tex.

Filed July 29, 1971, Ser. No. 167,256
Int. Cl. B05b *15/02*
U.S. Cl. 239—112 **9 Claims**

A plastic foam forming and spraying system which utilizes a spray gun that mixes resins and a catalyst in a mixing chamber substantially at the discharge end thereof. Provision is made for instantly cleaning the gun of the catalyst and resin mixture by passing a solvent therethrough to clean the mixture from the interior passages of the gun, and clean the outlet passages thereof by directing air and a solvent, under pressure,



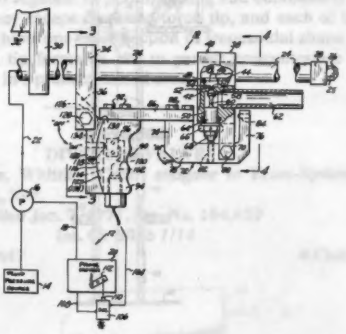
therethrough. A special valving arrangement enables the valves to direct a solvent into the passages without permitting the fluid to come into contact with the threads.

3,690,558

HYDRAULIC CLEANING DEVICE

Phillip E. Tuttle, Port Huron, Mich., assignor to Federal Screw Works, Detroit, Mich.

Filed Feb. 5, 1971, Ser. No. 112,862
Int. Cl. B05b *9/00*
U.S. Cl. 239—127 **8 Claims**



A hydraulic cleaning device in the form of a water gun, having a high pressure water nozzle for ejection of fluid under high pressure against a surface to be cleaned; the water gun has a two part pivotable handle assembly for manual control of the water gun; the grip portion of the handle controls the on and off water pressure through the jet nozzle and another portion of the pivotable handle assembly controls a dump valve having a by-pass outlet which dumps the fluid from the high pressure nozel, when the handle is released.

3,690,559

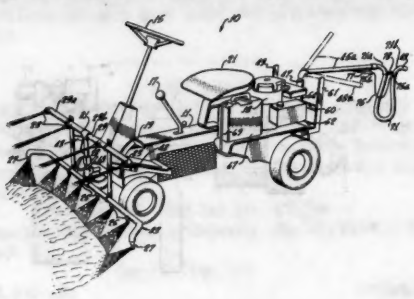
TRACTOR MOUNTED PAVEMENT WASHER

Robert H. Rudloff, 3205 Los Felix, Los Angeles, Calif.

Filed Sept. 16, 1970, Ser. No. 72,671
Int. Cl. B05b *1/20*
U.S. Cl. 239—163 **15 Claims**

Disclosed is a pavement washer having two sets of spray nozzles mounted on the front of a small tractor. Nozzles of the first set are aimed ahead substantially horizontally to throw a pattern of cleaning solution well ahead of the tractor, while the second set of nozzles are aimed sharply downward as well as forward to spray a pattern of water ahead of the tractor but

behind the cleaning solution. Also disclosed is an arrangement for connecting the tractor to a stationary source of water



through a hose wherein provision is made to shut off the ignition of the tractor before the hose is pulled taut.

3,690,560

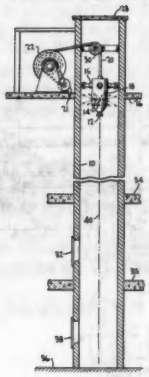
CHUTE SANITIZER AND FIRE EXTINGUISHER

John A. Boyd, 3314 Holloman Rd., Falls Church, Va.

Filed April 22, 1971, Ser. No. 136,381

Int. Cl. B65h *75/00*

U.S. Cl. 239—195 **9 Claims**



An apparatus is disclosed for sanitizing as well as extinguishing fires in a rubbish chute. Both the sanitizer and fire extinguisher portions of the apparatus are vertically movable within an existing rubbish chute. For sanitizing purposes, the apparatus has a plurality of spray nozzles which are directed at the vertical walls within the rubbish chute. By moving sanitizing apparatus vertically through the rubbish chute, the interior walls can be sprayed with a sanitizing chemical. The fire extinguisher, being also vertically movable through the rubbish chute, can be positioned at a point above and close to a fire and, thus quickly extinguish any fires which might occur within the rubbish chute.

3,690,561

THRUST CONTROLLING SYSTEM

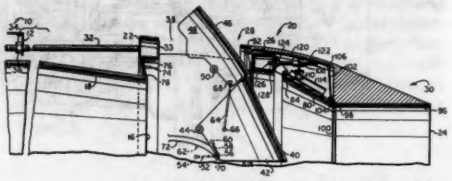
Earl B. Potter, El Cajon, Calif., assignor to Rohr Corporation, Chula Vista, Calif.

Filed Nov. 5, 1970, Ser. No. 87,167

Int. Cl. B64c *15/04*

U.S. Cl. 239—265.29 **11 Claims**

System includes a shroud surrounding a jet engine with a tail pipe extending rearward of the aft end of the shroud. A nozzle coaxial with the tail pipe is slidably mounted to the shroud for axial movement. In first, cruising, position the forward portion of the nozzle overlaps the tail pipe and the forward end of the nozzle is adjacent to the aft end of the shroud to form a continuous streamlined body. The inner wall of the nozzle aft portion includes a forward section which conforms to the exit end of the tail pipe and converges rearward. The aft section is generally cylindrical but may be slightly convergent or divergent. The entire aft portion of the nozzle comprises front hinged petals which swing outward to increase the gas flow path area and also to form a convergent-divergent nozzle for afterburner operation. The nozzle slides rearward to second, reversing, position with its forward end adjacent to the exit



plane of the tail pipe. Lateral openings are exposed when the nozzle is moved axially rearward and the blocker doors are opened to form outflow passages for exhaust gas to produce reverse thrust. Blocker doors and deflector doors form parts of the inner and outer wall at the openings and are pivoted on transverse axes. Linkage anchored to the shroud swings blocker doors inward in response to rearward movement, and linkage between blocker doors and deflector doors swings latter in response to swinging of former. When deployed, the deflector doors form continuations of the blocker doors to guide the outflow beyond the contour of the nozzle.

3,690,562

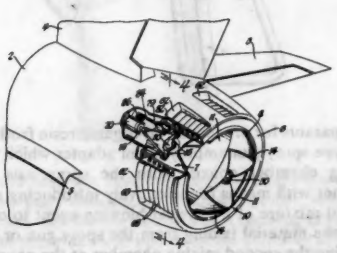
JET PROPULSION NOZZLE

Charles H. Smale, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed June 23, 1971, Ser. No. 155,828

Int. Cl. B64c *15/04*

U.S. Cl. 239—265.29 **7 Claims**

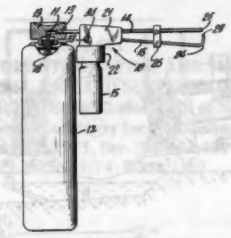


A variable area and reversing propulsion nozzle arrangement includes first and second sets of opposed valves or "eyelids" rotatable towards each other to reduce the area of the outlet of a jet pipe, the two sets of valves being rotatable about crossed axes. Reverse thrust outlets are disposed in the wall of the jet pipe between the axes of valve rotation, these including rotatable vane cascades which may close the outlets or direct the flow forwardly. The thrust reversing cascades and the area varying valves are coupled to common actuators, the arrangement being such that the reversing cascades begin to open only after the propulsion nozzle is partly closed.

3,690,563
ASPIRATOR ASSEMBLY

Allan P. Farrington, Englishtown, N.J. and Anthony J. Nastus, New Brunswick, N.J., assignors to Johnson & Johnson

Filed Jan. 18, 1971, Ser. No. 107,374
Int. Cl. B05b 7/30
U.S. Cl. 239—346 9 Claims



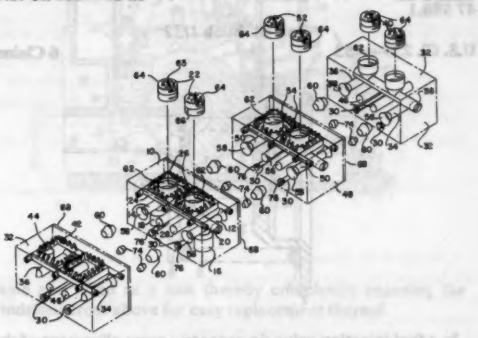
An aspirator assembly for use with a propellent gas source and small liquid containers is formed of such design that the same can be readily prepared by mass production, the same having a minimum of parts so that the cost can be kept low. The aspirator assembly is formed of two stainless steel tubes, one of which is adapted to conduct a propellent gas and the other of which is adapted to conduct the liquid to be sprayed. The gas-conducting tube, which has a gas-inlet end and a gas-outlet end, is a straight tube of somewhat larger diameter than the liquid-conducting tube. The liquid-conducting tube is more flexible than the gas-conducting tube and has two substantially right angle bends with one being near the liquid-entrance end and the other being near the liquid-exit end. The two tubes are positioned with respect to each other so that they lie in a single plane with their exit ends being in close relationship to each other and their entrance ends spaced apart the portion of the liquid-conducting tube which lies between the two bends being positioned at a slight angle with respect to the gas-conducting tube. The tubes are held in this position by molding a collar around the same, the collar completely covering the substantially right angle bend in the liquid-conducting tube which is located nearest its liquid-entrance end. By this construction the liquid-conducting tube is prevented from rotating with respect to the gas-conducting tube. Also, there is molded around the two tubes, in a position between the collar and the tube ends, a slide member which is adapted to slide along the tubes, such sliding moving the exit ends of the tubes relative to each other for regulating the spray pattern when in use. Both the positioning collar and the slide member can be molded simultaneously. They are preferably formed of polypropylene so that the aspirator assembly can be steam sterilized if desired.

In use the entrance end of the propellent gas-conducting tube is fitted into the gas-outlet opening of a conventional aerosol propellent can or some other suitable supply of gas. The two are held together by friction. The entrance end of the liquid-conducting tube is inserted into the mouth of a vial containing liquid to be dispensed. Preferably, the entrance end of the liquid-conducting tube is sharpened so that the same can pierce the covering diaphram of a liquid-containing vial where such diaphram is used. In such case friction between the resilient diaphram and the liquid-containing tube holds the vial in place. Where the vial does not have a diaphram cover the vial is opened and placed in a small container adapted to screw into a flange which is molded as part of the restraining collar.

3,690,564
SEGMENTAL TORCH TIP FOR MIXING AND COMBUSTION OF GASES

William J. Futerko, 19 Greenwood Ave., Butler, N.J.

Filed Aug. 16, 1971, Ser. No. 171,998
Int. Cl. B05b 7/06
U.S. Cl. 239—424.5 15 Claims

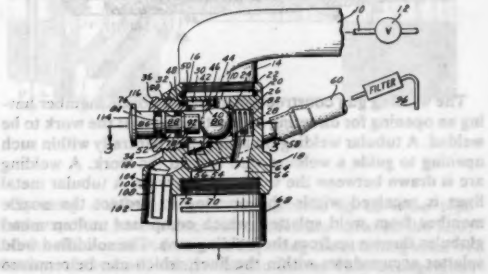


A segmental torch tip for mixing and combustion of gases whereby a plurality of segments are coupled together in fluid-tight relationship to provide a torch tip of variable size and shape. Each torch tip segment is provided with a plurality of gas passages that may be coupled in fluid-tight relationship with gas passages of each of the other segments, and the gases are supplied to the torch tip from sources via connections coupled to only one of the segments. A plurality of gas jet apertures are provided in fluid communication with the gas passage in each segment to permit mixing and combustion of the gases as they escape from the torch tip, and each of the segments may have one cross section of trapezoidal shape so that the torch tip forms an arc to permit concentration of flame and heat in a predetermined area.

3,690,565
DIVERTER VALVE

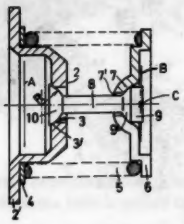
Ralph L. Abos, Whittier, Calif., assignor to Ecom-Systems, Inc., Reno, Nev.

Filed Jan. 7, 1971, Ser. No. 104,659
Int. Cl. B05b 1/14
U.S. Cl. 239—447 4 Claims



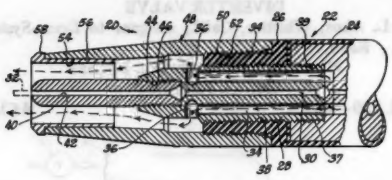
A diverter valve mechanism for selectively controlling the discharge of water from a faucet. There is a movable diverter valve which is manually actuated to effect diversion of the normal water flow from a faucet through a filter, from which the filtered water is returned to the faucet. The movable diverter valve is held by water pressure in the position for diverting water to the filter, as long as the manually operated faucet valve remains open. Upon closing of the manually operated faucet valve, spring pressure acts on the movable diverter valve to automatically return the movable diverter valve to the normal position whereat the unfiltered water is discharged from a faucet nozzle. A spring aids in moving the movable diverter valve to the normal position. There is a separate discharge nozzle for the discharge of filtered water.

3,690,566
FUEL INJECTION VALVE
Rudolf Krauss, Stuttgart, and Eugen Walch, Ditzingen, both of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany
Filed Sept. 3, 1971, Ser. No. 177,551
Claims priority, application Germany, Sept. 28, 1970, P 20 47 588.1
Int. Cl. B05b 1/32
U.S. Cl. 239—453 6 Claims



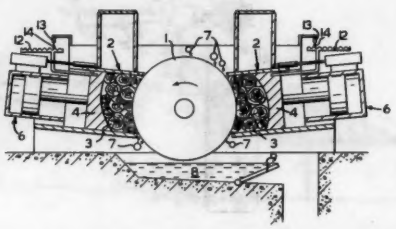
In a fuel injection valve, in order to ensure alignment of the movable valve member with the longitudinal axis of the fuel injection valve, the length of a compression spring surrounding the movable valve member and urging the latter into a closed position, is substantially greater than the length of the movable valve member when the latter is in its closed position.

3,690,567
ELECTRIC ARC WELDING GUN HAVING A NOZZLE WITH A REMOVABLE METAL LINER TO PROTECT THE NOZZLE FROM WELD SPLATTER
Lawrence A. Borneman, 411 W. Ethel Ave., Lombard, Ill.
Filed March 9, 1970, Ser. No. 17,361
Int. Cl. B05b 1/00
U.S. Cl. 239—591 15 Claims



The welding gun construction utilizes a nozzle member having an opening for directing an inert gas against the work to be welded. A tubular welding tip is disposed centrally within such opening to guide a welding wire toward the work. A welding arc is drawn between the work and the wire. A tubular metal liner is received within the opening to protect the nozzle member from weld splatter, which comprises molten metal globules thrown up from the welding area. The solidified weld splatter accumulates within the liner, which can be removed and disposed of as needed, before the weld splatter builds up to a thickness sufficient to cause a short circuit between the welding tip and the nozzle member. A new liner is then inserted into the nozzle. The liner is formed with a retaining element whereby the liner is held within the nozzle against accidental dislodgement. Such retaining element may take the form of an oval portion, one or more spring fingers bent outwardly from the liner, or a dimple portion formed by outward deformation of the liner. A pocket or tapered portion may be formed within the nozzle member to retain the outwardly projecting fingers or dimples. The liner may also be arranged for insertion into the nozzle from the rear, and may be retained in the nozzle by an outwardly projecting flange on the rear portion of the liner.

3,690,568
WOOD GRINDING
Donald K. Alexander, Thunder Bay, Ontario, Canada, assignor to Koehring-Waterous Ltd., Brantford, Ontario; Norton Company of Canada, Hamilton, Ontario; The Great Lakes Paper Company, Limited, Thunder Bay, Ontario, Canada; Montague Machine Company, Turners Falls and Norton Company, Worcester, Mass.
Filed Nov. 17, 1970, Ser. No. 90,340
Claims priority, application Canada, June 11, 1970, 085226
Int. Cl. B27l 11/08
U.S. Cl. 241—15 14 Claims

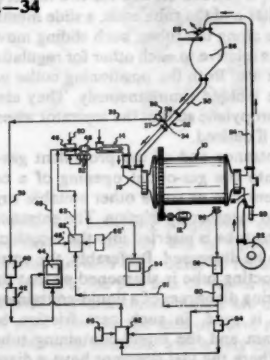


Wood is ground by forcing the wood against a grinding wheel rotated by a source of power, cooling the grinding area with a flow of cooling fluid and maintaining the energy supplied by the source of power per unit weight of ground wood at a substantially constant value.

3,690,569
GRANULAR POLYTETRAFLUOROETHYLENE OF GOOD MOLDABILITY AND APPARENT BULK DENSITY
Glenn Frederick Leverett, Vienna, W. Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Sept. 24, 1970, Ser. No. 75,235
Int. Cl. B02c 19/00, 23/00; C08f 3/24
U.S. Cl. 241—17 9 Claims

Granular polytetrafluoroethylene is ground to a particle size of about 20–50 microns, and slurried in water at a temperature less than 40° C. to increase the apparent bulk density of the polymer without a substantial change to the moldability index and particle size thereof.

3,690,570
METHOD OF AND SYSTEM FOR CONTROLLING GRINDING MILLS
William Edward Root, Berwick, Pa., assignor to Kennedy Van Saun Corporation, Danville, Pa.
Filed Aug. 10, 1970, Ser. No. 62,570
Int. Cl. B02c 25/00
U.S. Cl. 241—34 6 Claims



A grinding mill system including a grinding mill, a motor driven feeder for supplying material to the feed end of the

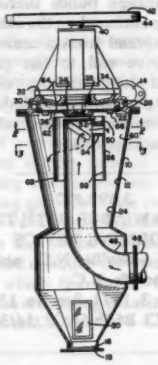
mill, a classifier, means for carrying mill production in a gaseous stream, such as air to the inlet of the classifier for the separation of oversize material, a duct for returning oversize material to the feed inlet of the mill and means associated with the duct, including a rotary position transmitter responsive to variation in the rate of flow of oversize or reject material through said duct and means for controlling the feeder motor in response to actuation of the rotary position transmitter and variations in the rate of flow of reject material from the classifier to the feed inlet of the mill. The control system may include means such as a microphone responsive to variations in the sound of the mill.

3,690,571

APPARATUS FOR DISINTEGRATING AND SEPARATING MATERIAL IN FLUID SUSPENSION

Oscar Luthi, and Rudi W. Schleinkofer, both of Nashua, N.H., assignors to Improved Machinery Inc., Nashua, N.H.

Filed May 12, 1971, Ser. No. 142,459
Int. Cl. B02c *13/14*; B03b *1/00*
U.S. Cl. 241—46 R **21 Claims**



Apparatus comprising a chamber containing a centrifugal pump arranged to pump material in fluid suspension to an accepts discharge, and a screen which limits the size of the material supplied by the pump to the accepts discharge and is rotatably driven to cause disintegration of coarse material in the suspension. Baffle means adjacent the screen feed face divide the chamber into communicating inner and outer portions, suspension being supplied to the screen through the chamber inner portion; and rotary vanes induce vortex flow of suspension in the chamber outer portion whereby heavy material is separated from the suspension by centrifugal separation.

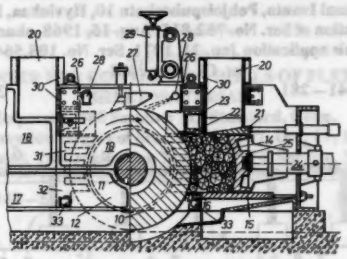
3,690,572

TWO PRESS GRINDER CONSTRUCTED FOR EASY WHEEL REPLACEMENT

Helmut Thumm, and Willy Schaich, both of Heidenheim, Germany, assignors to J. M. Voith, GmbH, Heidenheim (Brenz), Germany

Filed Nov. 25, 1970, Ser. No. 92,584
Claims priority, application Germany, Dec. 6, 1969, P 19 61 309.3
Int. Cl. B02c *19/00*
U.S. Cl. 241—151 **5 Claims**

The specification discloses a two press grinder, especially for grinding wood, in which a grindstone, or grinding wheel, is supported on a horizontal shaft in the machine frame and between opposed press boxes which press the material, namely, wood, against the periphery of the grindstone to be ground thereby. According to the present invention, the frame of the machine is so constructed that the side walls of the frame, and all operative parts of the machine disposed in the regions above the grindstone, can be detached from the machine



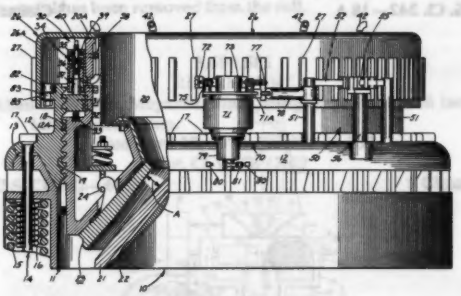
frame and lifted as a unit thereby completely exposing the grindstone from above for easy replacement thereof.

3,690,573

GYRATORY CRUSHER SECURING AND ADJUSTING MECHANISMS

Don Kueneman, 6224 Estates Dr., and Cyril P. Kenville, 10 Wood Court, both of Oakland, Calif.

Division of Ser. No. 657,473, July 27, 1967, Pat. No. 3,539,118. This application Aug. 18, 1970, Ser. No. 64,804
Int. Cl. B02c *2/00*
U.S. Cl. 241—207 **2 Claims**



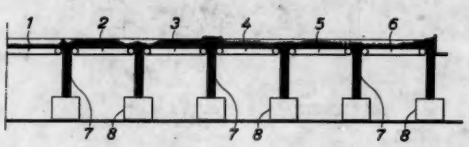
Gyratory crushers, sometimes referred to as cone type crushers, often have a threaded connection between the bowl and the main crusher frame for adjusting the crushing zone by rotation of the bowl relative to the frame. This arrangement requires bowl rotating and locking mechanisms, as well as means to remove the lost motion in the threaded connection, which, if not removed, will allow the bowl to vibrate axially damaging the threaded connection. By incorporating a floating ring structure keyed to the bowl so that it is free to move axially thereon with controllable means to effect relative axial movement between the floating ring and the bowl and supporting the floating ring on a surrounding wall structure on the frame so that the relative position of the floating ring and bowl will remain essentially constant during bowl adjustments, the lost motion in the threaded connection can be eliminated with the controllable means and cooperating leaf locking units and rotary actuators can be employed to fully automate such a crusher.

3,690,574

METHOD AND DISTRIBUTING OBJECTS OR GOODS AMONG A NUMBER OF CONSECUTIVELY PLACED POINTS OF CONSUMPTION OR STORAGE

Osmo Juhani Ivanto, Pohjoispuistokatu 10, Hyvinkaa, Finland

Continuation of Ser. No. 752,815, Aug. 15, 1968, abandoned.
This application Jan. 21, 1971, Ser. No. 108,564
Int. Cl. B02c 1/08
U.S. Cl. 241—281 3 Claims



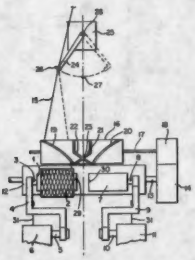
A method for distributing objects or goods among a number of consecutively placed points of consumption or storage from a conveyor which is composed of several consecutively arranged belt, chain, rope or other conveyors on which the objects or goods have been arranged to be transported from one conveyor to the other and to be distributed among the points of consumption or storage through the spaces between conveyors. The invention is characterized in that the gaps between the conveyors are constantly kept open and filled with the material itself which is being handled.

3,690,575

MULTIPLE YARN PACKAGE TAKE-UP

Shoji Ito, Inazawa; Kotaro Fujioka, Nagoya; Mitsuhiro Okamoto, Nagoya, and Tetsuya Kikuchi, Nagoya, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Nov. 5, 1970, Ser. No. 87,182
Claims priority, application Japan, Nov. 19, 1969, 44/92115
Int. Cl. B65h 54/02
U.S. Cl. 242—18 A 3 Claims



Multiple package filament winding apparatus having at least two take-up positions placed right and left as a pair, arranged for taking up yarns alternately, fed by a traversing roller which has two traversing slots separated right and left, and two alternately crossing transfer slots, each of which connects into each of the traversing slots.

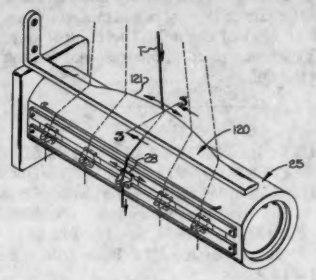
3,690,576

TEXTILE THREAD WINDER WITH TENSION COMPENSATING DEVICE

George F. Schroeder, Asheville, N.C., assignor to Northrop Carolina, Inc., Ashville, N.C.

Filed May 3, 1971, Ser. No. 139,359
Int. Cl. B65h 54/02
U.S. Cl. 242—18 DD 2 Claims

A textile thread winder with a device for compensating for variations in tension in thread being wound due to increases and decreases in the length of the path of travel of the thread from a thread source to a package roll caused by traversing action of a traversing mechanism. The textile thread winding apparatus has a driven rotating drive roll, at least one freely rotatable package roll positioned on one side of the drive roll for engagement therewith to be driven thereby for winding of thread and mounted for linear movement away from the drive



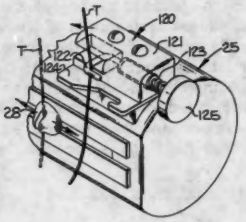
roll as the thread package builds thereon, and a thread traversing mechanism positioned on the other side of the drive roll for receiving the thread from a source and guiding the thread around the drive roll to the package roll while traversing the thread longitudinally of the drive roll. Preferably, the winding apparatus includes mechanisms for maintaining a predetermined pressure relationship between the drive roll and the package roll.

3,690,577

TEXTILE THREAD WINDER WITH TRANSFER TAIL FORMING DEVICE

George F. Schroeder, Asheville, N.C., assignor to Northrop Carolina, Inc., Asheville, N.C.

Filed May 3, 1971, Ser. No. 139,514
Int. Cl. B65h 54/02, 54/34
U.S. Cl. 242—18 PW 4 Claims

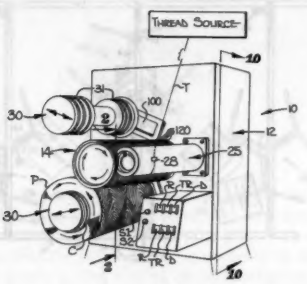


A textile thread winder with a device for forming a transfer tail on the package being wound. The textile thread winding apparatus has a driven rotating drive roll, at least one freely rotatable package roll positioned on one side of the drive roll for engagement therewith to be driven thereby for winding of thread and mounted for linear movement away from the drive roll as the thread package builds thereon, and a thread traversing mechanism positioned on the other side of the drive roll for receiving the thread from a source and guiding the thread around the drive roll to the package roll while traversing the thread longitudinally of the drive roll. Preferably, the winding apparatus includes mechanisms for maintaining a predetermined pressure relationship between the drive roll and the package roll. Preferably, the transfer tail forming device comprises a cooperating movable hook member and stationary cam member.

3,690,578
TEXTILE THREAD WINDER WITH GROOVED DRIVE ROLL

Bert B. Morgan, and George F. Schroeder, both of Asheville, N.C., assignors to Northrop Carolina, Inc., Asheville, N.C.

Filed May 3, 1971, Ser. No. 139,640
Int. Cl. B65h 54/02, 54/28
U.S. Cl. 242—18 DD 18 Claims

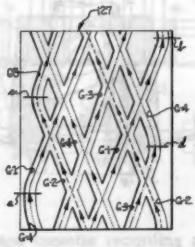


In a strand or textile thread winding apparatus, the combination of a reciprocating strand or thread traversing mechanism for receiving the strand being wound under tension and guiding the strand to the package winding device while traversing the strand back and forth to form a traversed wound package, and a cylindrical roll, preferably a rotating drive roll, positioned in the path of travel of the strand between the traversing mechanism and the package winding mechanism and having grooves in the outside surface thereof cooperating with the traversing mechanism for controlling the traversing action on the strand by receiving the strand in respective grooves and holding the strand in the respective traversed positions which the strand is placed during the traversing action of the traversing mechanism to aid in guiding and controlling the strand.

3,690,579
TEXTILE THREAD WINDER WITH IMPROVED THREAD TRAVERSING MECHANISM

William D. Porter, and Larry H. Taylor, both of Asheville, N.C., assignors to Northrop Carolina, Inc., Asheville, N.C.

Filed Nov. 15, 1971, Ser. No. 198,671
Int. Cl. B65h 54/28
U.S. Cl. 242—43 6 Claims

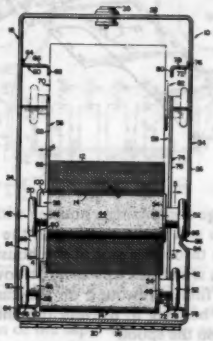


A textile thread winding apparatus having a driven rotating drive roll, at least one freely rotatable package roll positioned for engagement with and to be driven by the drive roll for winding a package of yarn thereon, and a thread traversing mechanism for receiving thread from a source and guiding the thread to the package roll while traversing the thread longitudinally of the package roll for spiral winding of the thread. The thread traversing mechanism comprises devices for traversing the thread in successively different strokes during successive plural stroke cycles for forming successive spirally wound layers of thread on the package which are placed in different positions on the thread package for eliminating layering of the thread in the thread package and the formation of hard shoulders at each end of the thread package which occur when the thread is traversed in the same strokes during successive cycles.

3,690,580
DISPENSER FOR CONVENTION ROLLS OF FLEXIBLE SHEET MATERIAL

Paul W. Jespersen, 800 Summer St., Stamford, Conn.

Continuation-in-part of Ser. No. 784,307, Dec. 17, 1968, abandoned. This application May 13, 1970, Ser. No. 36,855
Int. Cl. B65h 19/04, 75/02
U.S. Cl. 242—55.3 18 Claims

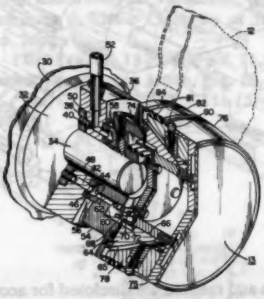


A flexible sheet material dispenser comprising; a spindle on which a roll of flexible sheet material is adapted to be rotatably mounted, means for supporting the spindle to thereby rotatably support the roll in a dispensing position, and means for automatically disengaging the spindle from the supporting means after a predetermined amount of flexible material has been removed from the roll.

3,690,581
REEL MOUNT

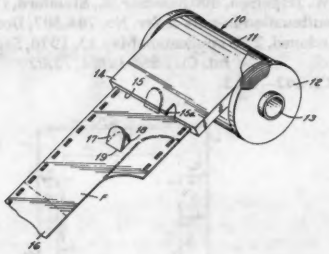
Allan C. Wainio, Maynard, Mass., assignor to Honeywell Inc., Minneapolis, Minn.

Filed April 20, 1970, Ser. No. 29,937
Int. Cl. B65h 17/02
U.S. Cl. 242—68.3 5 Claims



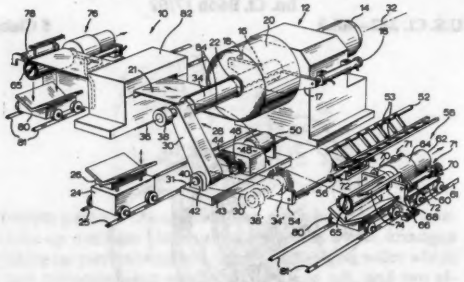
A reel mount for use in a tape transport having mechanical means for retaining and aligning a supply reel thereon, which is operated by fluid pressure. The reel mount comprises a hub having a resilient band expandible through movement of a plurality of collet elements arranged on the hub. Application of sub-atmospheric fluid pressure to the hub forces the collet elements along an incline to expand the resilient band, and cause the band to grip a reel located on the hub, while a plurality of plungers simultaneously serve to locate the reel in alignment on the hub.

3,690,582
FILM CARTRIDGE
Harvey H. Duvall, 39441 Van Dyke-Apt. 208, Sterling Heights, Mich.
Filed Nov. 12, 1970, Ser. No. 88,710
Int. Cl. G03b *1/04*; G11b *15/32*
U.S. Cl. 242—71.1 9 Claims



A film cartridge comprising a housing with a spool rotatably mounted therein and film wound upon the spool. The end of the film extends through a slot in the housing to the exterior and a tab or tabs are struck upwardly or downwardly from the film. When the film is rewound on the cartridge, the tab or tabs engage the housing to prevent the end of the film from being wound upon the spool.

3,690,583
METHOD AND APPARATUS FOR SCRAP COIL TRANSFER IN CONTINUOUS STRIP PROCESSING LINES
Hans Herman, Ancaster, Ontario, Canada, assignor to The Steel Company of Canada, Limited, Hamilton, Ontario, Canada
Filed March 23, 1971, Ser. No. 127,117
Int. Cl. B21c *47/24*
U.S. Cl. 242—78.1 8 Claims

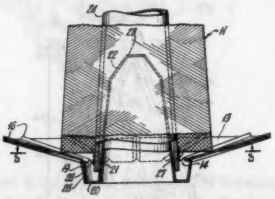


An apparatus and method are disclosed for accelerating the usually time-consuming operation, in a continuous strip-processing line, of removing the tail-end scrap from the line prior to bringing in a new coil. A swingable arm supports a transfer mandrel which aligns with the conventional pay-out mandrel in one position, and can swing to another position out of the way of an incoming new coil. After a given coil has been run down to the tail-end scrap, its rotation is halted, the strip is severed, the scrap coil is pushed off onto the aligned transfer mandrel, and the latter is swung to the other position where a conventional scrap-coiler unwinds the tail-end scrap from the transfer mandrel.

3,690,584
APPARATUS FOR MAINTAINING UNIFORM YARN TENSION DURING UNWINDING OF A YARN PACKAGE
Philip E. Wilkerson, Rt. 2, Box 216, Randleman, N.C.
Filed April 26, 1971, Ser. No. 137,419
Int. Cl. B65h *49/00*
U.S. Cl. 242—128 13 Claims

A cone shaped, spherical or otherwise tapered support member seated on the upper end of an upstanding pin engages and supports a textile yarn package or pirn internally at a point above its center of gravity so that the weight of the package causes it to automatically assume a vertical position. A yarn guide eye is positioned directly above and spaced from the support member, whereby the axis of the textile package is self-aligning with the guide eye. Corrugations in the yarn holder surface spiral around the holder at an angle substantially perpendicular to the path of the yarn as it is unwound therefrom.

3,690,585
YARN PACKAGE SUPPORT
Lawrence Lesavoy, New York, N.Y., assignor to Glen Creations, Inc., New York, N.Y.
Continuation-in-part of Ser. No. 749,456, Aug. 1, 1968. This application Jan. 20, 1971, Ser. No. 108,038
Int. Cl. B65h *49/00*
U.S. Cl. 242—129.8 8 Claims



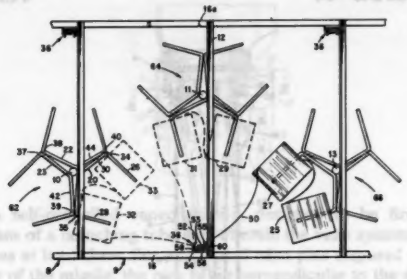
A device for supporting a package of yarn attendant its unwinding and for preventing the snagging and breaking of the yarn is an integrally formed unit and includes a vertical hub which engages the yarn package, an annular bottom wall joining the bottom of the hub and provided along its periphery with an upwardly directed outer wall. Extending from the upper edge of the outer wall is an upwardly outwardly inclined annular base member provided on its top face with radially extending ribs of triangular cross-section. The yarn package is engaged by the hub and the outer border of its underface rests on the ribs so that the withdrawal of yarn disposed along the underface of the package is facilitated.

3,690,586

CREEL

Elmer E. Bock, Knoxville, Tenn., assignor to Textile Machinery Company, Inc., Chattanooga, Tenn.

Filed March 1, 1971, Ser. No. 119,526
Int. Cl. B65h *49/02*; D02h *1/00*; D03j *5/08*
U.S. Cl. 242—131 13 Claims



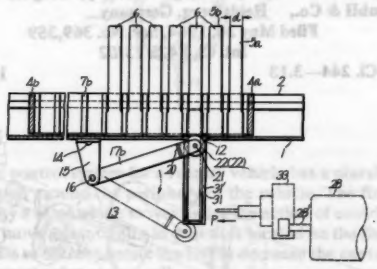
A creel for supporting a plurality of spools of filamentary matter comprising a plurality of spool holders extending generally horizontally to receive spools of filamentary matter thereon, the spool holders extending generally horizontally and disposed in an arcuate array about a focal take-off element. Multiple arcuate arrays are disposed in staggered back-to-back relation to develop close packing of the arrays and provide a creel which effects a substantial saving of space while simultaneously exposing each of the spool holders for ready access for loading spools of filamentary matter thereon.

3,690,587

AUTOMATIC TAPE CASSETTE RECORDING AND PLAYBACK APPARATUS

Ryozo Kitazawa, Kawasaki, Japan, assignor to Nippon Columbia Kabushikikaisha (Nippon Columbia Co., Ltd.), Tokyo

Filed Feb. 25, 1970, Ser. No. 13,978
Claims priority, application Japan, June 6, 1969, 44/44492; June 6, 1969, 44/53070; Dec. 29, 1969, 44/135; Jan. 10, 1970, 45/3119
Int. Cl. G11b *23/02*
U.S. Cl. 242—181 15 Claims



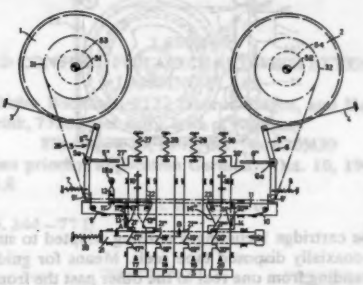
An automatic tape cassette recording and playback apparatus having cassette support means for a plurality of tape cassettes, means for slidably supporting the cassette support means and having guide hole means, tape recording and playback means, means for driving the cassette support means, means for driving one of the plurality of tape cassettes, a mechanism for interlocking the tape recording and playback means, the means for driving the cassette support means, a motor for driving the interlocking mechanism and the tape driving means, means for selectively driving the interlocking mechanism, tape detecting means, and electric circuit means for controlling the motor and the interlocking mechanism driving means.

3,690,588

TENSION CONTROLLING MEANS FOR MAGNETIC TAPE OR THE LIKE

Hans Eckert, and Uwe Ehms, both of Nuernberg, Germany, assignors to Grundig E.M.V. Elektro-Mechanische Versuchsanstalt Inhaber Max Grundig, Fuerth/Bayern, Germany

Filed Dec. 3, 1970, Ser. No. 94,912
Claims priority, application Germany, Dec. 19, 1969, P 19 63 613.6
Int. Cl. B65h *59/38, 63/02*; G03b *1/04*
U.S. Cl. 242—189 15 Claims



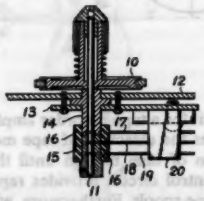
A tape recorder wherein the supply reel is braked with a weaker force during transport of magnetic tape at a normal speed so that the braking action varies as a function of changes in tension of the tape. The supply reel is subjected to a stronger braking action in response to termination of rapid forward transport or rapid rewinding of tape to thus prevent spillage and/or looping of tape due to inertia of the supply reel. The stronger braking action is produced by a regulating device having two torsion springs one of which assists that spring which serves to tension a band brake for the supply reel upon termination of rapid rewinding of tape onto the supply reel and the other of which assists that spring which serves to tension a band brake for the supply reel upon completion of rapid forward transport of the tape toward the takeup reel. That reel which constitutes the supply reel during forward transport of tape becomes the takeup reel during rewinding, and vice versa.

3,690,589

TAPE END DETECTION DEVICE FOR TAPE RECORDER

Takuro Bonjyo, and Katsuyuki Yamashita, both of Yokohama, Japan, assignors to Victor Company of Japan Limited, Yokohama, Japan

Filed Feb. 13, 1970, Ser. No. 11,166
Claims priority, application Japan, Feb. 18, 1969, 44/11511
Int. Cl. B65h *25/32*; G11b *15/46*
U.S. Cl. 242—191 3 Claims

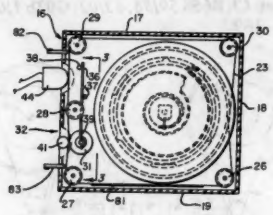


A tape end detection device for a tape recorder comprising a substantial switch means to open or close alternately in cooperation with a rotary body during running of a tape, a capacitor charging and discharging through the switch means, and a detection output means actuating when after the tape stops its running and the switch means stops its opening or closing, the capacitor discharges a predetermined amount.

3,690,590
COAXIAL TAPE CARTRIDGE

William Coffey Bennett, Menlo Park, and Edwin O. Stastny, Santa Ana, both of Calif., assignors to Novar Corporation, Mountain View, Calif.

Filed Jan. 6, 1970, Ser. No. 886
Int. Cl. G11b *23/10, 15/43*
U.S. Cl. 242—194 6 Claims

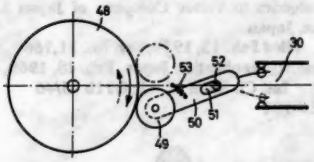


A tape cartridge including a housing adapted to support a pair of coaxially disposed tape reels. Means for guiding the tape extending from one reel to the other past the front of the cartridge. A spring-loaded back-up roller for urging the tape towards an associated capstan. Spring means cooperate between said reels to rotate the reels in opposite directions to maintain suitable tape tension and drive one reel from the other.

3,690,591
REMOTE CONTROL FOR RECORDERS

Christian Opelt, Bernbach, Germany, assignor to Grundig E.M.V., Kurgartenstrasse, Germany

Filed Oct. 6, 1970, Ser. No. 78,515
Claims priority, application Germany, Oct. 17, 1970, P 19 52 330.9
Int. Cl. B11b *15/32;* G03b *1/04*
U.S. Cl. 242—204 11 Claims



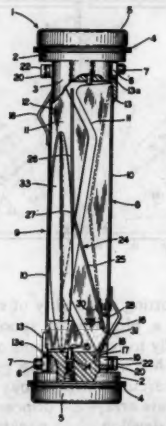
A control circuit for a tape recorder employing a novel element which senses the direction of tape motion and remembers the direction of tape motion until the tape motion is reversed. The control circuit provides rapid and controlled stopping of the tape spools. Furthermore, when the end of the tape is sensed by the control circuit, the circuit stops the tape and prevents it from being restarted in the same direction to avoid the tape from running out.

3,690,592
Patent Not Issued For This Number

3,690,593
PNEUMATIC CARRIER LOAD EJECTOR CONSTRUCTION

Dale O. Kettering, Canton, Ohio, assignor to Diebold, Incorporation, Canton, Ohio

Filed July 28, 1970, Ser. No. 58,850
Int. Cl. B65g *51/06*
U.S. Cl. 243—34 4 Claims

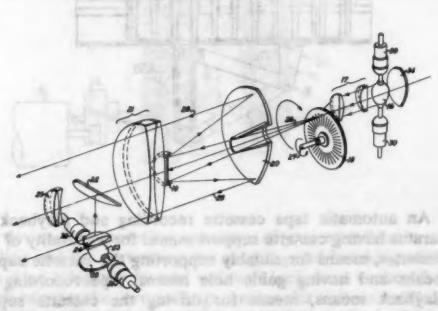


A load ejector construction for material-conveying carriers in pneumatic tube systems, particularly captive carriers for conducting bank transactions. An ejector plate is pivotally mounted at its lower end by a flexible hinge adjacent an end of the carrier to which a door is pivotally mounted opposite the ejector plate. The ejector plate moves by gravity towards the open doorway when said opposite door is opened from a retracted position to an extended position within the carrier forcing the contents out of the carrier through the exposed doorway.

3,690,594
METHOD AND APPARATUS FOR THE DETERMINATION OF COORDINATES

Joseph F. Menke, Heidelberg, Germany, assignor to Eltro GmbH & Co., Heidelberg, Germany

Filed May 20, 1964, Ser. No. 369,359
Int. Cl. F42b *15/02*
U.S. Cl. 244—3.13 19 Claims



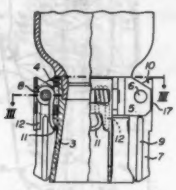
In order for an object in space to locate itself, a beam of electromagnetic radiation is transmitted at it, each cross-sectional element of which beam is modulated by a slotted disc rotating on its axis and at the same time about the axis of the beam. The object receiving one of the elements can thus locate itself relative to the beam axis.

3,690,595

SELF-PROPELLED, VANED MISSILE

Maurice Rusbach, Geneva, Switzerland, assignor to Sarmac S.A., Geneva, Switzerland

Filed Nov. 19, 1970, Ser. No. 91,037
Int. Cl. C06d *1/04*; F42b *13/32*
U.S. Cl. 244—3.27 12 Claims



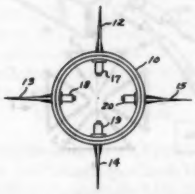
A self-propelled vaned missile, designed to be fired by means of a launching tube and wherein the vane system comprises at least three fins articulated onto pins disposed at the rear of the missile, the pins being perpendicular to the axis of the missile. It is new in that the fins of the said vane system are double fins, each having blades which are joined at their hinged end by a bridge and equipped with spacing springs. These springs exert on the fins a force greater than the resistance which the air exerts on them in the course of the missile's advance, and cause the open out of the said rear fins towards the front as soon as the missile has left the launching tube.

3,690,596

SPIN CONTROL SYSTEM FOR REENTRY VEHICLE

Donald A. Durran, Manhattan Beach, and Daniel H. Platus, Playa Del Rey, both of Calif., assignors to The United States of America as represented by the Secretary of the United States Air Force,

Filed May 2, 1969, Ser. No. 823,247
Int. Cl. F42b *15/14*
U.S. Cl. 244—3.21 2 Claims



A spin control system for a reentry vehicle has a plurality of fins located around the periphery of the vehicle. The fins are rotated by a mass which moves under the action of centrifugal force to move a pair of pins in cam slots located on the fin support shafts to thereby rotate the fins to decrease the cant angle from a preset value at zero roll.

3,690,597

VERTICAL TAKE-OFF LANDING AIRCRAFT HAVING A PAIR OF COAXIAL COUNTER-ROTATING ROTORS, EACH FORMED BY A SET OF REVOLVABLE BLADES RADIALLY JUTTING FROM THE BODY OF THE CRAFT

Renato Di Martino, Parco Margherita n.8, Naples, Italy

Filed Aug. 19, 1970, Ser. No. 65,115
Claims priority, application Italy, Jan. 20, 1970, 48200 A/70
Int. Cl. B64c *29/00*
U.S. Cl. 244—23 C 1 Claim

A vertical take-off landing aircraft, wherein at the periphery of a saucer-shaped body counter-rotate two similar and coaxial rotors. A rotor is composed of an annular caisson moved by

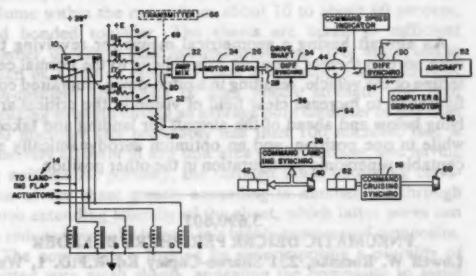
gas-turbines and of a set of aerofoil-shaped blades jutting out of the caisson and revolvable around their own axis.

3,690,598

SPEED CONTROL FOR AIRCRAFT WITH EXTENSIBLE LANDING FLAPS

Hans-Dieter Buchholz, 9772 Oberuhldingen, and Hans-Peter Reerink, 7758 Meersburg, both of Germany

Filed April 30, 1969, Ser. No. 820,439
Claims priority, application Germany, Oct. 10, 1968, P 18 02 243.0
Int. Cl. B64c *13/50*
U.S. Cl. 244—77 D 6 Claims



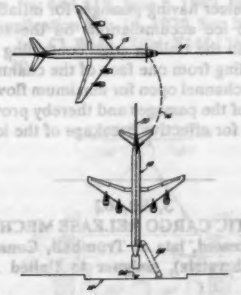
A speed controller for an aircraft is described which is adapted for regulating aircraft speed at a desired command speed and for automatically altering the command speed for particular aircraft landing weight in accordance with the degree of extension of the aircraft landing flaps.

3,690,599

AIRCRAFT DOCKING GUIDE

Ira Vincent Hager, P.O. Box 632, Miami Springs, Fla.

Filed March 11, 1971, Ser. No. 123,207
Int. Cl. B64f *1/18*
U.S. Cl. 244—114 R 9 Claims



An aircraft guide means for use by a pilot in docking an aircraft of the type having a nose wheel. It includes a mirror mounted on the docking line, the mirror being within the line of sight of the pilot and reflecting an image of the docking line

at the stopping release so that the pilot can tell when his wheel is at the predetermined stopping point on the docking line. The aircraft includes a light means arranged to be viewed in the mirror which tells the pilot if the plane is askew relative to the docking line. Signal means are provided to be actuated by the nose wheel of the aircraft when it is at the stopping point so that the pilot will stop the aircraft at the proper location.

3,690,600

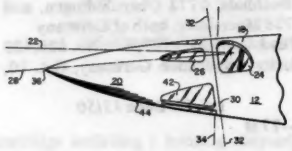
ROTATING VARIABLE NOSE

Clifford B. Cooper, Fort Worth, Tex., assignor to General Dynamics Corporation, Fort Worth, Tex.

Filed Nov. 24, 1970, Ser. No. 92,362

Int. Cl. B64c 1/00, 1/28

U.S. Cl. 244—120 **8 Claims**



An aircraft having a geometrical means for revolving the nose portion thereof about an axis oblique to the normal centerline of the vehicle, resulting in a pitch-down, nonfaired configuration to increase clear field of vision in the critical area lying below and ahead of the aircraft for landing and takeoff while in one position, and an optimum aerodynamically acceptable supersonic configuration in the other position.

3,690,601

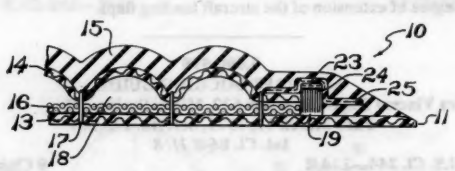
PNEUMATIC DEICER PERIPHERY BLEEDER

Lowell W. Roemke, 231 Sharon-Copley Rd.-R.F.D. 1, Wadsworth, Ohio

Filed Sept. 23, 1970, Ser. No. 74,690

Int. Cl. B64d 15/16

U.S. Cl. 244—134 A **4 Claims**



A pneumatic deicer having passages for inflation and deflation to break up ice accumulations on the surface with a bleeder channel in the trailing edge containing a plurality of stiff fibers extending from one face of the channel toward the other to hold the channel open for maximum flow of the inflating medium out of the passages and thereby provide the rapid deflation needed for effective breakage of the ice forming on the surface.

3,690,602

AUTOMATIC CARGO RELEASE MECHANISM

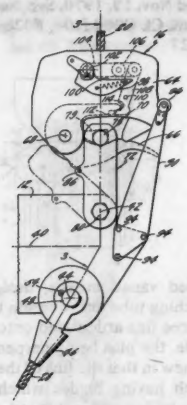
John Marsh, deceased, late of Trumbull, Conn. (by Jean S. Marsh, administratrix), assignor to United Aircraft Corporation

Filed March 30, 1971, Ser. No. 129,499

Int. Cl. B64d 1/00

U.S. Cl. 244—137 R **16 Claims**

Automatic release mechanism for cargo handling equipment in which cargo is supported from a spreader bar, which is in turn connected at its opposite ends to one or more aircraft and which includes cargo release mechanism responsive to



spreader bar rotation about the transverse axis at one of its ends to release the cargo hook which is located between the spreader bar and the aircraft.

3,690,603

ARRANGEMENT FOR INCREASING THE LIFT AND/OR SUSTAINING POWER OF SAILS, AND SAILS INCLUDING THIS ARRANGEMENT

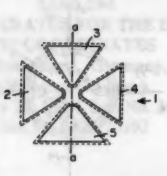
Pierre Marcel Lemoigne, Montrouge, France, assignor to Etudes et Fabrications Aeronautiques, Paris, France

Filed Aug. 6, 1970, Ser. No. 61,617

Claims priority, application France, Aug. 8, 1969, 6927330

Int. Cl. B64d 17/18

U.S. Cl. 244—145 **5 Claims**



The sail at least partially comprises pockets each presenting a generally conical, pyramidal or frusto-pyramidal form with its concavity directed towards the inner surface of the sail. A part at least of these pockets constitutes nozzles accelerating the flow of air and/or modifying the direction of the flow.

3,690,604

PARACHUTE STOWAGE AND DEPLOYMENT

Le Roy F. Guilfoyle, Point Pleasant, N.J., assignor to Parachutes Incorporated, Orange, Mass.

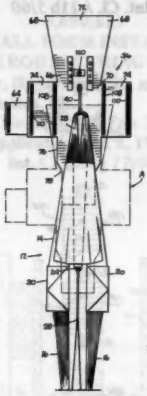
Filed Feb. 2, 1970, Ser. No. 7,939

Int. Cl. B64d 17/40

U.S. Cl. 244—148 **23 Claims**

Stowage and deployment arrangements for parachutes according to which a parachute canopy is first folded and a securing means, forming the deployment device, is wrapped about the folded canopy and secured to itself by detachable pull apart securing means and the parachute suspension lines are reefed outside the device in a manner such that the device

will not separate or allow release of the canopy until the suspension lines are fully extended. Novel suspension line



reefing arrangements are also described which hold the lines reefed until a pull is exerted on a trigger line from the deployment device.

3,690,605

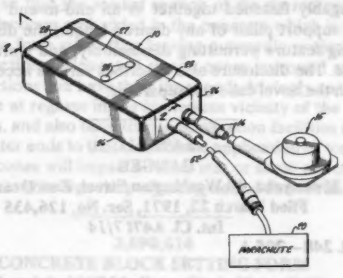
PARACHUTE RELEASE MECHANISM

Leon Jones, 11332 Pemberton Rd., Los Alamitos, Calif.

Filed Sept. 21, 1970, Ser. No. 74,004

Int. Cl. B64d *17/56, 17/58*

U.S. Cl. 244—149 **14 Claims**



The mechanism includes first and second chambers each of which continuously communicates with the ambient space through a small opening. The sizes of the chambers, and the sizes of the openings, are such that a predetermined relationship is maintained between the pressure in the first chamber and the pressure in the second chamber, regardless of the rate of climb or fall. Preferably, the predetermined pressure relationship is such that the pressures in the two chambers remain equal to each other. The sizes of the chambers and of the openings are also determined in such manner as to satisfy other conditions. An aneroid is provided to effect opening of a relatively large-diameter port between one of the chambers and the ambient space when a set altitude is reached. A diaphragm is provided between the two chambers and is responsive to the differential in pressure therebetween, created by the aneroid, to actuate the parachute release. Trigger and latch means associated with the diaphragm are adapted to cause reliable triggering in response to relatively low pressure differentials, and without danger of spurious actuation. The small openings between the chambers and the ambient space are capillary passages. The size of the diaphragm is small in comparison to chamber volume.

3,690,606

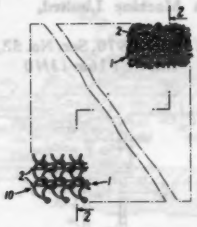
ANISOMETRIC COMPRESSED AND BONDED MULTILAYER KNITTED WIRE MESH COMPOSITES

David B. Pall, Roslyn Estates, N.Y., assignor to Pall Corporation, Glen Cove, N.Y.

Filed May 27, 1968, Ser. No. 732,443

Int. Cl. B22f *7/02*

U.S. Cl. 245—1 **14 Claims**



Anisometric compressed and bonded knitted wire mesh composites are provided which comprise a plurality of sheets of knitted wire mesh, superimposed at random orientation with respect to each other, compressed or densified to a voids volume within the range from about 10 to about 90 percent, and bonded together. The sheets are taken in sufficient number, usually at least five and preferably 10 or more, and as much as 1,000 or more, to form a self-supporting relatively non-resilient composite of high tensile strength and high breaking strength having an average pore diameter of less than 200 microns, and preferably less than 100 microns, that is relatively uniform in any unit area of the surface, and having an anisometric porosity, the through pores extending crosswise of the sheet greatly exceeding in number the through pores extending laterally of the sheet, which latter pores can be reduced virtually to zero in a highly compressed composite.

The composite is formed by superimposing a plurality of knitted wire mesh sheets, annealing the composite to avoid wire breakage during later processing, compressing the composite to the desired density and anisometricity by application of pressure in a direction approximately perpendicular to the plane of the layers of the composite, and bonding the sheet layers and the wire filaments of the sheets together at their points of contact and/or crossing. The bonding holds the composite at the selected density, prevents relative movement of the wires in the composite, and in conjunction with the multilayer structure imparts the self-supporting nonresilient characteristic, together with high tensile strength and high breaking strength.

3,690,607

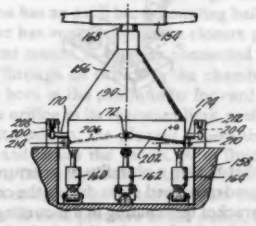
VIBRATION ISOLATION SYSTEM

Kenneth C. Mard, 160 Wilbrook Road, Stratford, Conn.

Division of Ser. No. 643,518, June 5, 1967, Pat. No. 3,514,054. This application Feb. 16, 1970, Ser. No. 14,842

Int. Cl. B64c *27/04*; F16f *15/10*

U.S. Cl. 248—20 **4 Claims**



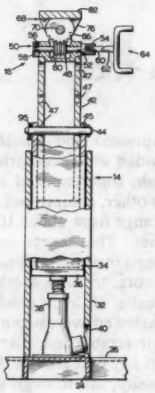
This invention relates to a mounting system for a body, such as a wind tunnel model or a helicopter transmission, by which

the vibrational loads in one plane or about axes in a common plane can be isolated from the mount while loads in other directions or about other axes can be transferred directly to the mount.

3,690,608
ADJUSTABLE STAND

Julius Polzner, Downsview, Ontario, Canada, assignor to Newark Tool & Machine Limited, Weston, Ontario, Canada

Filed July 7, 1970, Ser. No. 52,965
Int. Cl. F16m *11/10*
U.S. Cl. 248—371 **3 Claims**

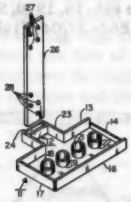


An adjustable stand for supporting attachments adjacent a machine tool table. The stand has a base on casters for easy movement, and a telescopic upright extends upwardly from the base. A tilting mechanism is attached to the top of the upright and supports an auxiliary table to which attachments may be fastened. The telescopic upright and titling mechanism combine to permit adjustment of the height and angular position of the auxiliary table to match the position of the machine tool table.

3,690,609
PIPE BRACKET

Renaldo Montesdioca, Chula Vista, Calif., assignor to Bellon Plumbing Company, Incorporated, San Diego, Calif.

Filed June 16, 1970, Ser. No. 46,604
Int. Cl. F16l *3/12*
U.S. Cl. 248—68 B **1 Claim**



A pipe bracket having a plurality of apertures dimensioned for receiving predetermined pipes during the construction of a building; the bracket terminating in a mounting extension; the mounting extension having a slot therein for being removably carried by a vertical mounting bracket adapted for nailing to a concrete foundation form board.

3,690,610
CAKE TIER SEPARATOR

Patricia Marie Peirce, 2551 W. Ball Street, Anaheim, Calif.

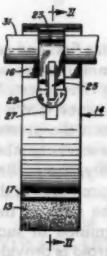
Filed Nov. 4, 1970, Ser. No. 86,831
Int. Cl. A21b *5/00*
U.S. Cl. 248—159 **10 Claims**

The disclosed cake tier separator provides a home baker with a device that is adjustable, sturdy, and re-usable. The device comprises a pair of support plates that are spaced apart by a plurality of adjustable length support pillars. These, in turn, comprise a plurality of pillar components that may be disengagably fastened together in an end-to-end manner to form a support pillar of any desired length; the disengagable fastening feature permitting disassembly, and storage for future use. The disclosure also describes various accessories for use with the novel cake tier separator.

3,690,611
HANGER

Bakari Mwanyoha, 40 Washington Street, East Orange, N.J.

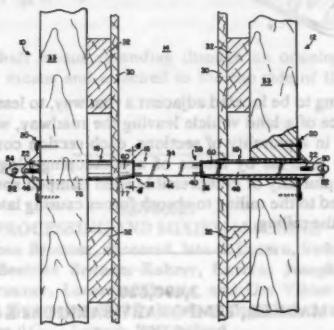
Filed March 22, 1971, Ser. No. 126,435
Int. Cl. A47f *7/14*
U.S. Cl. 248—205 A **8 Claims**



A hanger which comprises a load-supporting member pivotally coupled to an arcuate member, said arcuate member being slidably connected to a mounting plate which carries a pressure-sensitive tape for attachment of the hanger to a vertical surface. Under load, the load-supporting member is pressed against the arcuate member causing the arcuate member to apply pressure components to the mounting plate in a direction opposing the force-moment which normally tends to pull the hanger away from the surface to which it is affixed.

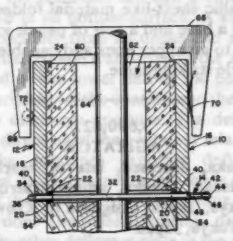
3,690,612
Patent Not Issued For This Number

3,690,613
CONCRETE WALL FORM INSTALLATION WITH PARTICULAR TIE ROD SECURING MEANS THEREFOR
James C. Shoemaker, Hampshire, Ill., assignor to Symons Corporation, Des Plaines, Ill.
Division of Ser. No. 802,109, Feb. 25, 1969, Pat. No. 3,625,470. This application Oct. 8, 1970, Ser. No. 79,234
Int. Cl. E04g 17/08
U.S. Cl. 249—40 5 Claims



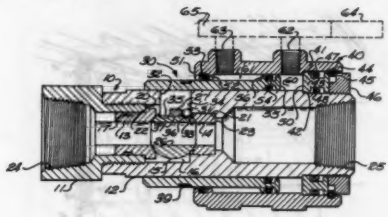
Securing means for a concrete wall form including a flat tie rod having means at its end sections for attachment to the form sides so that the medial section of the tie rod spans the form and becomes embedded in the concrete which is poured between the form sides, thus leaving outwardly projecting tie rod end sections. Elongated sleeve cones surround such tie rod end sections and have their inner ends drivingly connected to the same at regions in the immediate vicinity of the tie rod breakbacks, and also have torque-application facilities at their exposed outer ends to that the manual application of torque to the sleeve cones will impart a radial tear or shear effect at the breakbacks to thus free the projecting tie rod end sections.

3,690,614
CONCRETE BLOCK SETTING FORM
Victor B. Cherniak, 1057 Madison, Chula Vista, Calif.
Filed May 11, 1970, Ser. No. 35,986
Int. Cl. E04g 21/22
U.S. Cl. 249—90 1 Claim



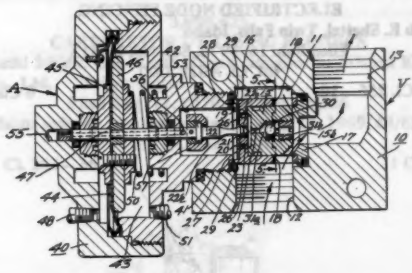
A concrete block setting form comprising a pair of side boards which are secured on an initial course of blocks by quick release clamps, to hold one or more blocks in precise alignment. The side boards have ribs which spaced the block or blocks, so that mortar or concrete poured in place will form seamed joints of proper thickness.

3,690,615
AUTOMATIC VALVE
Gerald L. Rogers, Ballwin, Mo., assignor to Stile-Croft Manufacturers, Inc., St. Louis, Mo.
Continuation-in-part of Ser. No. 783,315, Dec. 12, 1968. This application July 24, 1970, Ser. No. 57,913
Int. Cl. F16k 31/163
U.S. Cl. 251—31 8 Claims



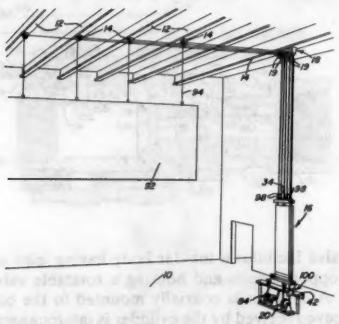
This valve includes a tubular body having inlet and outlet ports at opposite ends and housing a rotatable valve cut-off member. A cylinder is coaxially mounted to the body and a piston sleeve received by the cylinder is interconnected to the rotatable member to rotate this member between open and closed valve positions. The sleeve includes a collar and the cylinder includes annular closure walls at each end. The collar and closure walls define pressure chambers supplied by fluid to induce reciprocating motion into the sleeve.

3,690,616
PILOT-OPERATED VALVES
Donald E. Lewis, 112 Gentilly Drive, and Douglas A. Biesecker, R. D. #3, both of Clarks Summit, Pa.
Filed Nov. 18, 1970, Ser. No. 90,547
Int. Cl. F16k 31/12
U.S. Cl. 251—38 9 Claims



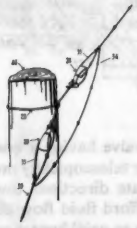
A pilot-operated valve having a body with an inlet and an outlet and a chamber telescopically mounting a piston for displacement in alternate directions toward or away from the outlet to block or afford fluid flow through the valve is provided. The piston has an axial bore mounting ball check means and the chamber has vent means and a closure plate normally covering the vent means. A plunger connected to a valve actuator extends through an orifice in the chamber wall to engage across the bore in the piston in its forward limit position and to close the orifice in its rearward limit position. When in its forward limit position, the plunger causes the chamber to be pressurized and closes the valves. With fluid pressure applied at the inlet, the ball check vents fluid from the chamber and to the outlet to disengage the piston from the outlet and to open the valve with fluid pressure at the outlet, the ball check cooperates with the vents and closure plate to vent fluid from the chamber and to the inlet to disengage the piston from the outlet and to open the valve.

3,690,617
WATER COUNTERWEIGHT SYSTEM FOR THEATRICAL PROPS AND CURTAINS
Lloyd V. Butler, 5251 79th Street, Sacramento, Calif.
Filed Jan. 20, 1970, Ser. No. 4,265
Int. Cl. A63j 1/02
U.S. Cl. 254—141 8 Claims



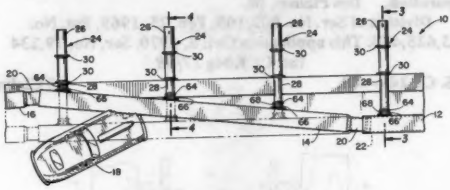
A counterweight assembly for theatrical scenery comprising a hollow enclosure supported for vertical shifting and adapted to have scenery suspension lines attached thereto with the enclosure acting as a counterweight for the scenery. The enclosure includes an inlet and an outlet opening therefor through which water may be pumped into the enclosure to increase the weight thereof and through which water may be drained from the enclosure to decrease the weight thereof.

3,690,618
ELECTRIFIED NODE FENCING
Ralph E. Shettel, Twin Falls, Idaho
Filed Feb. 16, 1970, Ser. No. 14,812
Int. Cl. A01k 3/00
U.S. Cl. 256—10 8 Claims



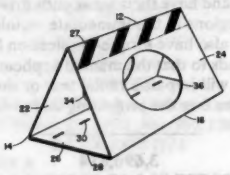
A charged node fenceline for the control and confinement of livestock in general being a conductor strand insulated against unintentional grounding with the incorporation of protuberances equally spaced along the length thereof disposed in contact with the conductor strand to deliver an electrical shock to livestock. Terminal insulators are provided to maintain the required tension and thereby free the fencing wire to longitudinal travel in response to abuse and stress. Intermediate carriers loosely contain and protectively support the fencing wire while offering the advantages of direct nailing.

3,690,619
ENERGY ABSORBING GUARDRAIL
Giles A. Kendall, Burbank, Calif., assignor to Menasco Manufacturing Company, Burbank, Calif.
Filed Dec. 10, 1970, Ser. No. 96,932
Int. Cl. E01f 15/00
U.S. Cl. 256—13.1 5 Claims



A railing to be located adjacent a roadway, to lessen the impact force of a land vehicle leaving the roadway, which is assembled in a plurality of sections, each section connected to adjacent sections by means of a telescoping hinge and slip joint. A plurality of compressible solid damped springs to be connected to the railing to absorb forces causing lateral movement of the railing.

3,690,620
ROAD MARKER, TEMPORARY BARRICADE OR THE LIKE
Carl G. Matson, 401 E. Central Blvd., and Robert Bruce Martin, 906 E. Prospect St., both of Kewanee, Ill.
Filed Dec. 28, 1970, Ser. No. 101,878
Int. Cl. E01f 13/00
U.S. Cl. 256—64 5 Claims

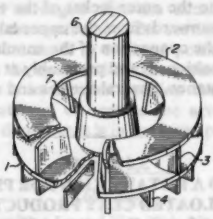


A collapsible structure useful in marking highways, etc. as to detours, road construction and the like and complying with safety and highway regulations. This structure is made of heavy non-metallic sheet-like material folded into triangular form to provide a base and a pair of panels joined to the base and converging to an upper apex and capable of being "trampled" by a vehicle striking same.

3,690,621
AGITATOR
Masatami Tanaka, deceased, late of Machida-shi, Tokyo, Japan (by Itsuko Tanaka, administratrix), and Tadashi Hirotani, Tokyo, Japan, assignors to Kyowa Hakko-Kogyo Co., Ltd., Tokyo, Japan
Filed March 4, 1969, Ser. No. 804,743
Int. Cl. B01f 5/16
U.S. Cl. 259—96 12 Claims

The present disclosure is directed to an agitating apparatus comprising an agitating blade assembly, said agitating blade assembly including upper and lower disk means which are spaced apart by a plurality of radially disposed plate means,

said lower disk means also containing a plurality of radially disposed blade plate means attached to its bottom side, and



agitating shaft means extending through an opening in the upper disk means and attached to the top side of the lower disk means.

3,690,622

PROCESSING AND MIXING MACHINE

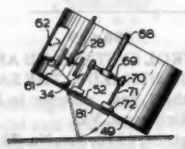
Josef Alphons Brunner, deceased, late of Luzern, Switzerland; by Pia Beatrice Brunner-Rohrer, Luzern; Joseph Moritz Hugo Brunner, Locarno-Minusio, and Urs Viktor Johann Brunner, Kusnacht, all of Switzerland (legal heirs), assignors to Spemag AG, Luzern, Switzerland

Filed Feb. 26, 1970, Ser. No. 14,509

Claims priority, application Switzerland, Feb. 28, 1969, 3091/69

Int. Cl. B28c 5/28, 5/32, 7/16

U.S. Cl. 259—169 **16 Claims**



In a treatment and mixing machine, a cylindrical container is rotatable about an upwardly extending axis and the axis is disposed at an acute angle to the horizontal. Materials are discharged from the container through a closeable aperture centrally arranged in its bottom surface. A support post extends into the container from its upper end and a deflector plate with an arcuate shape transverse to the axis of the container is mounted at the lower end of the post and extends from the inner periphery of the container to the adjacent outer periphery of the discharge aperture. The deflector plate is short in the axial direction of the container relative to the axial dimension of the container. Another deflector plate is pivotally mounted on the support post and is movable in the axial direction of the container for controlling the turbulence of the mixing action. The axially movable deflector plate is located behind the other deflector plate in the direction of the path of rotation of the container. Extending downwardly into the material in the container is at least one rotatable tool which is located below the apex of the path of rotation of the container. In use, the container is rotated at a speed so that the centrifugal forces acting on the parts of the material are greater than the weight of the parts and a turbulent mixing action is developed.

3,690,623

TWIN SCREW EXTRUSION PRESSES

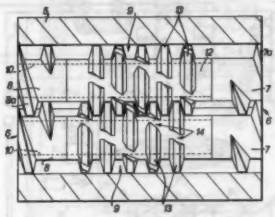
Ivor Fenwick Boyne, West Ewell, England, assignor to GKN Windsor Limited

Filed May 26, 1970, Ser. No. 40,620

Claims priority, application Great Britain, June 11, 1969, 29,696/69

Int. Cl. B29f 3/02

U.S. Cl. 259—192 **7 Claims**



The invention consists in providing in a twin-screw injection or extrusion machine for moulding plastics material, a flow control means located between successive sections and/or at the forward end of the screws and comprising intermeshing flanged members each having a plurality of radial parallel flanges and each of said flanges having a plurality of circumferentially spaced gaps forming flow paths for the plastics material, said flanged members being rotatably adjustable relative to each other to vary the relative angular positions of the gaps in adjacent flanges thereby to vary the cross-sectional area or the course of said flow paths.

3,690,624

Patent Not Issued For This Number

3,690,625

CARBURETOR UTILIZING FLUIDICS

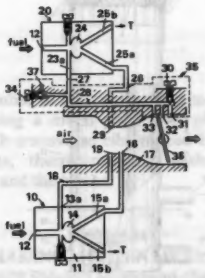
Takashi Ishida, Ohi-Machi, Japan, assignor to Mikuni Kogyo Co., Ltd., Tokyo, Japan

Filed Aug. 17, 1970, Ser. No. 64,286

Claims priority, application Japan, Aug. 18, 1969, 44/65229

Int. Cl. F02m 69/04

U.S. Cl. 261—36 A **1 Claim**



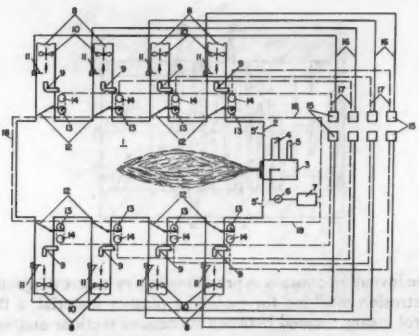
A carburetor whose main fuel flow system is constructed by a jet deflection proportional fluid amplifier. The carburetor has a separate fluid amplifier adapted to inject a fuel for use in a slow fuel flow system by means of a negative pressure in proportion to the amount of air passing through a throttle valve opening.

3,690,626

METHOD AND EQUIPMENT FOR HEATING GAS AND MAINTAINING A DESIRED TEMPERATURE IN A PLURALITY OF FEED DUCTS

Julius Vernazza, Aachen, Germany, assignor to H. Krantz, Aachen, Germany

Filed Dec. 4, 1970, Ser. No. 95,245
Int. Cl. F23l 9/04
U.S. Cl. 263—19 A 2 Claims



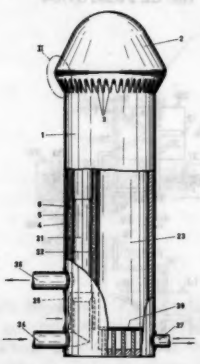
A method and equipment for controlling the temperature of heated gas forced through a plurality of ducts from a heating chamber, in which each duct has an associated variable flap which sets the cross section of the duct and a temperature sensing device which retains the flaps in position such that a desired predetermined temperature of the gas forced through the ducts will be maintained.

3,690,627

REGENERATIVE AIR HEATER SUCH AS HOT BLAST STOVE

Cornelis Van Herk, Haarlem, and Johannes Cornelis Mes, Alkmaar, both of Netherlands, assignors to Koninklijke Nederlandsche Hoogovens Ent. Staalfabriken N.V.

Filed March 8, 1971, Ser. No. 121,762
Claims priority, application Netherlands, March 10, 1970, 7003397
Int. Cl. F23l 15/00; F23m 9/00
U.S. Cl. 263—19 R 8 Claims



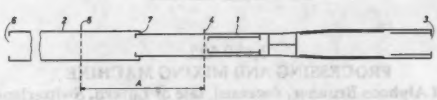
The blast stove comprises a preferably cylindrical hollow vertical body of refractory bricks closed at the top by a dome of refractory bricks overlying and protruding radially outside the vertical body at the top thereof, the entire body and dome is surrounded by a jacket of steel, and the dome is built up on and is supported by a steel annular element which is in a gas-tight manner connected to the outer steel jacket of the dome and of the vertical cylindrical body, the connection of the said annular element to the steel jacket of the vertical body and/or of the dome extending with respect to the axis of the vertical body alternately in a mainly radial and in mainly axial directions, this annular element being supported by a row of brackets secured to the outer jacket of the vertical body at a larger distance downwards from the upper edge of the vertical body than where the connection of the annular element to the vertical body is positioned, and preferably at at least twice the last mentioned distance. Several species and auxiliary features are also disclosed.

3,690,628

METHOD AND A ROTARY KILN FOR PRODUCING A BLOATED CLAY PRODUCT

Harry Kamstrup-Larsen, Copenhagen Valby, Denmark, assignor to A/S Dansk Lecabeton, Glostrup, Denmark

Filed Aug. 6, 1970, Ser. No. 61,781
Claims priority, application Denmark, Aug. 6, 1969, 4228/69
Int. Cl. F27b 7/02
U.S. Cl. 263—21 B 14 Claims



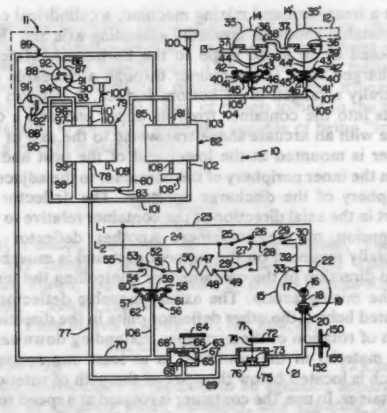
A bloated granular clay product is manufactured by heating clay in a first step from atmospheric temperature to 300°–600° C. during a long period of time whereafter the clay now forming granules in a second step is heated to 1,150°–1,175° C. in a relatively short period of time i.e., about 15 – 30 minutes. The heating is effected in a rotary kiln having a drying section and a burning section. The first heating step is provided in the drying section and the second heating step takes place in a transition zone between the two sections. To ensure the quick heating in said second step there is provided heat transfer means in the transition zone.

3,690,629

PNEUMATIC CONTROL SYSTEM AND APPARATUS AND METHOD UTILIZING THE SAME

Douglas R. Scott, Elkhart, Ind., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Sept. 14, 1970, Ser. No. 72,073
Int. Cl. F27b 7/00; F15b 11/08, 13/042
U.S. Cl. 263—33 B 15 Claims



A pneumatic control system for an apparatus having a movable access door means, a pneumatic source, pneumati-

cally operated actuator means for controlling the apparatus, conduit means for interconnecting the source to the actuator means, and a suction cup means fluidly interconnected to the conduit means and having an open end for interconnecting the conduit means to the atmosphere. The suction cup means is so constructed and arranged that the access door means is adapted to close the open end of the suction cup means when the access door means is in a closed position thereof and is adapted to open the open end of the suction cup means when the door means is in an open position thereof whereby the source can be utilized to operate the actuator means only when the access door means is in its closed position.

3,690,630

Patent Not Issued For This Number

3,690,631

REEL FOR ROD OR WIRE

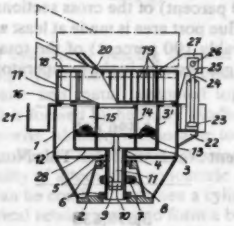
Hans Peter Pech, Langenfeld, Germany, assignor to Schloemann Aktiengesellschaft, Dusseldorf, Germany

Filed Nov. 30, 1970, Ser. No. 93,704

Claims priority, application Germany, Nov. 29, 1969, P 19 59 972.5

Int. Cl. C21d 01/62

U.S. Cl. 266—6 R **10 Claims**



In one form of reeling rod or wire, the rod or wire is coiled in a rotating vertical axis drum with a fixed container around the drum for holding cooling liquid so that the drum can rotate below the level of the liquid and to prevent the liquid being thrown out of the drum by centrifugal force, there is an annular casing above the drum with a diameter larger than that of the drum and a coaxial fixed ring of deflectors within the annular casing. The annular casing is fixed against rotation, but can preferably be lifted up, for instance, to discharge the finished coil. The deflectors stop or slow down the top zone of the swirling liquid and can prevent or make less marked the formation of a cone shaped surface on the liquid.

3,690,632

BLAST FURNACE CONTROL BASED ON MEASUREMENT OF PRESSURES AT SPACED POINTS ALONG THE HEIGHT OF THE FURNACE

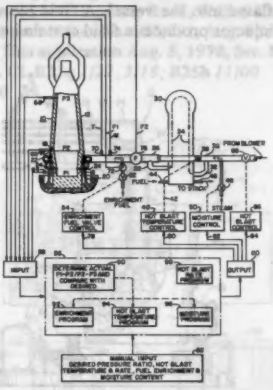
William A. Munson, Williamsville, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 30, 1970, Ser. No. 102,615

Int. Cl. F27d 7/02

U.S. Cl. 266—30 **9 Claims**

A system for automatically controlling the addition of moisture, the addition of enrichment fuels and/or the temperature of a hot blast for a blast furnace as a function of the ratio of (1) the pressure differential between the pressure in the furnace at the tuyeres and at a point slightly above the



mantle to (2) the pressure differential at said point slightly above the mantle and that at the top of the furnace.

3,690,633

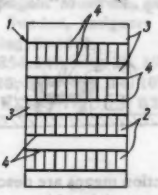
COOLING COMPONENTS FOR COOLING SYSTEMS OF METALLURGICAL FURNACES AND METHOD FOR PRODUCING THE SAME

Sergei Mikhailovich Andoniev, Kharkov; Nikolai Nikitovich Alexandrov, Moscow; Nikolai Ivanovich Klochnev, Moscow; Evgeny Vladimirovich Kovalevich, Moscow; Alexandrovich Kudlinov; Dorina Borisovna Kutsykovich, both of Kharkov; Vasily Ivanovich Kulikov, Moscow, and Oleg Vladimitrovich Filipiev, Kharkov, all of U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky i Proektny Institut po Ochistke Tekhnologicheskikh Gazov i Stochnykh Vod i Iskolzovaniju Vtorichnykh energoresursov predprinyaty Chernoi Metallurgii, Kharkov, U.S.S.R.

Filed Sept. 30, 1970, Ser. No. 76,703

Int. Cl. C21b 7/10

U.S. Cl. 266—32 **2 Claims**



A cooling member in the cooling system of a metallurgical furnace comprising a metal plate with pipes for a cooling medium and with transverse ribs placed between which are refractory bricks, thermo-resistant gaskets being placed between the ribs and the bricks.

3,690,634

DEVICE FOR MAKING MOLTEN METAL FOR CASTING

Ryosuke Enya, 3620 Shinichi Murozumi-cho, Hikari, Japan

Division of Ser. No. 17,151, March 6, 1970, Pat. No. 3,653,877. This application Aug. 4, 1971, Ser. No. 168,887

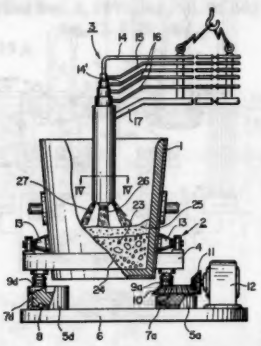
Claims priority, application Japan, Sept. 11, 1969, 44/71624

Int. Cl. C21b 11/00

U.S. Cl. 266—33 R **15 Claims**

Apparatus for melting metal for casting, comprises a vessel and a framework mounting the vessel on a base. A continu-

ously cooled vertical injector above the vessel mixes separately delivered fuel gas and oxygen-rich gas at the lower end of the injector and burns the fuels-gas-oxygen mixture so as to direct the flame into the vessel. A fluid blower disposed adjacent the injector produces a fluid curtain between the flame



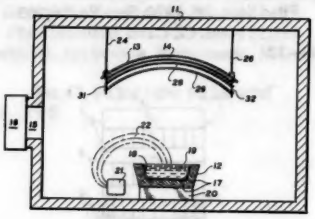
of the fuel-gas-oxygen mixture and the inner surface of the vessel so as to surround the frame. Drive means translates the framework together with the vessel along a closed path so as to cause the material in the vessel to rotate therein about an axis which is offset from the central axis of the vessel.

3,690,635

CONDENSATE COLLECTION MEANS

Howard R. Harker, Mill Valley, and Geoferey H. Humberstone, Berkeley, both of Calif., assignors to Air Reduction Company, Incorporated, New York, N.Y.

Filed May 16, 1969, Ser. No. 825,271
Int. Cl. C21c 7/00
U.S. Cl. 266—34 R **5 Claims**



Condensate collection means are described for use in a furnace for processing materials subject to vaporization wherein condensate is collected by means of a collector plate and one or more mesh structures positioned to condense the vapor. The one or more mesh structures allow vapor to first pass through to the collector plate but prevent solid pieces of condensate from falling back toward the vapor source.

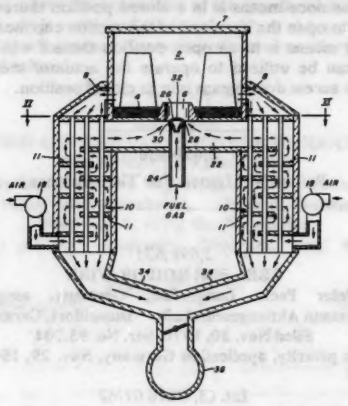
3,690,636

RECUPERATIVE FURNACES

Robert A. Shannon, Avon Lake, and Charles A. Waters, Lorain, both of Ohio, assignors to United States Steel Corporation

Filed Dec. 3, 1970, Ser. No. 94,735
Int. Cl. C21d 1/06
U.S. Cl. 266—5 S **10 Claims**

Recuperative furnaces, such as soaking pits, have recuperators formed of sets of ceramic tiles arranged end to end with aligned holes in each set of tiles forming one series of passages for the flue gas and openings between the sets of tiles forming a second series of passages for the air to be heated. The heated air from the recuperator is directed through an air tunnel to an entry or burner port where it is mixed with coke oven gas or other fuel. Combustion is completed in the combustion or heating chamber which also receives the ingots to be heated. The burnt gases pass from the chamber through a flue gas port to the recuperator. It is impossible to maintain a gas tight con-



nection between the tile. To prevent air leakage into the flue gas passages and increase fuel efficiency and production the entry port area is made at least approximately 75 percent (preferably 100 percent) of the cross sectional area of the air tunnel and the flue port area is made at least approximately 75 percent (preferably 100 percent) of the total cross sectional area of the flue gas passages in the recuperator.

3,690,637

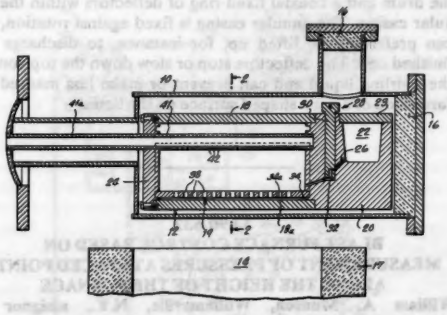
Patent Not Issued For This Number

3,690,638

APPARATUS FOR VAPORIZING MOLTEN METAL

John M. Roblin, Cleveland; Frank J. Cole, Parma, and William A. Reed, West Richfield, all of N.J., assignors to Republic Steel Corporation, Cleveland, Ohio

Filed May 15, 1970, Ser. No. 37,703
Int. Cl. C21c 7/00
U.S. Cl. 266—34 R **22 Claims**



Apparatus and method for vacuum vaporization of molten metal without entrainment of liquid droplets includes charging a pool of molten metal into a first cylinder member which has its central axis disposed horizontally and has at least one passage therethrough. A second cylinder member, also having its central axis disposed horizontally, encloses the first

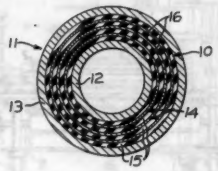
cylinder member so as to receive molten metal through the passage. A thin semi-cylindrical shell of fluid metal is thus formed between the cylinder members. Heating the thin shell generates metal vapor. The metal vapor is passed through a tortuous path to remove any liquid droplets, and is discharged from an outlet nozzle for deposition upon a substrate.

In a modification the molten metal is contained in the lower portion of an evaporator member. A shelf with a passage therethrough divides the evaporator member horizontally while allowing generated metal vapor to pass to the upper portion of the evaporator member. There the vapor is passed through a tortuous path to remove any liquid droplets, thence proceeding to an outlet nozzle for deposition upon a substrate.

3,690,639
HELICALLY WOUND LAMINATED BEARINGS AND METHOD OF MANUFACTURE

William D. Brandon, and Jack A. Drais, both of Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 5, 1970, Ser. No. 77,819
Int. Cl. F16c 1/10
U.S. Cl. 267—57.1 17 Claims

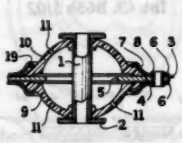


An improved cylindrical bearing material of a laminated construction employs a plurality of alternating cylinderical shells of elastomer and metal laminated together in which each metal shell is formed by helically winding a band of the metal in an edge-wise, abutting relationship to form a cylindrical metal shell or sleeve. The resulting bearing material, composed of a plurality of alternating concentric elastomeric and metallic shells can be confined between a cylindrical core and an outer cylindrical retaining ring to form a bearing assembly in which the bearing material may be placed under a radial pre-load, if desired, to decrease its radial deflection when it is placed under radial loads. In the preferred embodiment of the invention, the adjacent metal shells are wound in opposite directions to stabilize the bearing material under torsional loading.

3,690,640
VIBRATION DAMPER

Andre Lucien Pineau, 12 Rue de Bearn 92, Saint-Cloud, France

Filed Jan. 26, 1971, Ser. No. 109,895
Claims priority, application France, Feb. 3, 1970, 7003678
Int. Cl. F16k 1/36
U.S. Cl. 267—137 11 Claims

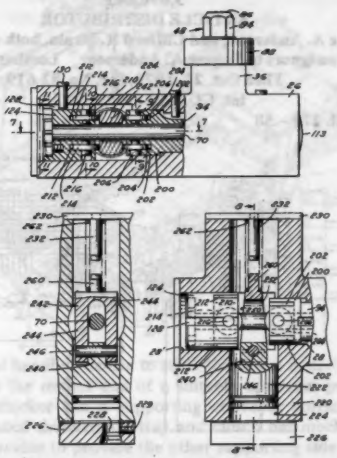


Damper of vibrations between two elements comprising a center rod adapted to be connected to one of the elements and a mount surrounding the rod and adapted to be connected to the other element. The rod and mount are interconnected by two elastically yieldable bell-shaped membranes. The latter have at their apices apertures in which the rod is engaged and are connected to the mount at their peripheries.

3,690,641
FLUID OPERATED SPRING LOADED JACK LOCK ASSEMBLY

Dean A. Claycomb, 2320 Haggerty Road, Walled Lake, Mich.

Continuation-in-part of Ser. No. 662,031, Aug. 21, 1967, Pat. No. 3,537,701. This application Aug. 5, 1970, Ser. No. 61,378
Int. Cl. B23q 1/22, 3/18; B25b 11/00
U.S. Cl. 269—20 13 Claims

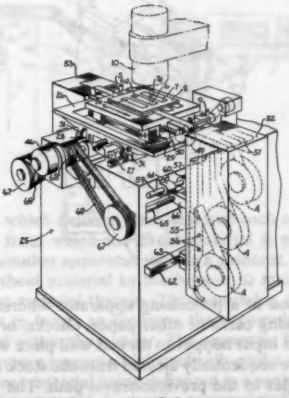


A spring loaded jack lock assembly for supporting a workpiece at fixed points. The assembly includes a vertically movable plunger adapted to be fixedly located in a work supporting position by locking elements adapted to engage opposite sides of the plunger. A camming member is provided to move the elements into locking engagement with the plunger. A power operated pistonscylinder assembly has a rack and gear connection with the camming member to operate it.

3,690,642
MEANS FOR CONFINING A TRANSLATABLE MEMBER TO STRAIGHT LINE MOTION

Borje Angelstrand; Ragnar Mostrom, and Henry Yngvesson, all of Jonkoping, Sweden, assignors to Saab-Scania Aktiebolag, Linkoping, Sweden

Division of Ser. No. 854,147, Aug. 28, 1969. This application Jan. 20, 1971, Ser. No. 107,972
Int. Cl. B23q 1/18, 3/18; B25b 1/24
U.S. Cl. 269—56 4 Claims



In structure comprising a pair of elements, one movable in a straight path relative to the other, one of the elements is pro-

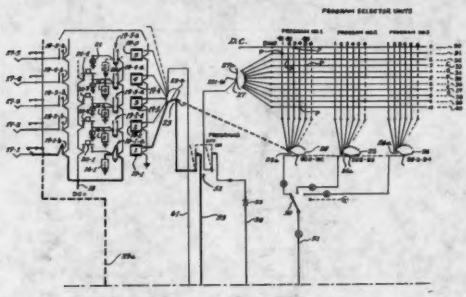
vided with a track having a true, flat master surface extending in the direction of motion and an oppositely facing generally flat and parallel surface. The other element has rollers on fixed axes engaging the master surface and rollers on yieldingly movable axes engaging the other surface to maintain the first mentioned rollers firmly engaged with the master surface.

3,690,643

ARTICLE DISTRIBUTOR

Eugene A. Anderson, and Clifford R. Strain, both of Lombard, Ill., assignors to Eugene A. Anderson, Lombard, Ill.

Filed Oct. 21, 1970, Ser. No. 82,619
Int. Cl. B65h *39/02, 29/58*
U.S. Cl. 270—58 26 Claims



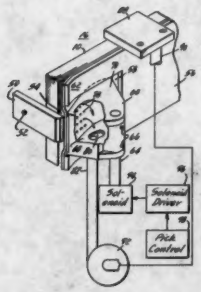
Copy sorting and distributing apparatus for automatically depositing a preselected number of copies in particular storage spaces. A switch selects a particular program which is arranged to indicate particular numbers of copies or articles to be deposited in particular bins. The program units together with switch mechanism represent copy counting mechanisms which automatically reset themselves and set up the apparatus for depositing copies in a succeeding space. Program units may be changed automatically.

3,690,644

CARD HANDLING MECHANISM

Silas Ray Halbert, Brevard, Fla., assignor to Documation, Inc., Melbourne, Fla.

Filed Dec. 30, 1970, Ser. No. 102,796
Int. Cl. B65h *3/10*
U.S. Cl. 271—29 20 Claims



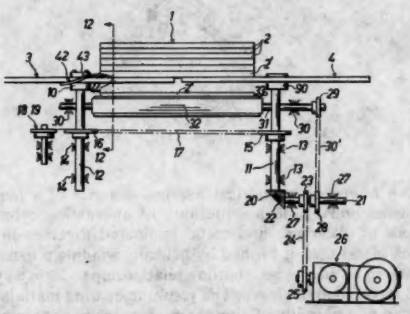
Picker used in a processing apparatus wherein a stack of data processing cards or other paper, checks, or the like, are fed along an input hopper to an end wall plate where each of the cards are sequentially ejected from the stack in a direction at right angles to the previous travel path. The picker seizes each card as it reaches the end plate and directs the card one at a time in the new direction past a throat formed by a throat bar defining the throat passage past the end plate. The end plate has a window for the picker face near the throat bar. The picker is a substantially hollow body with angular walls and a generally arcuate picker face having holes therein and is supported in the window so that it can be turned by a drive means a predetermined angle of rotation in the direction of the throat. Suction means are connected to the picker to generate a negative pressure force through the holes therein to cause the foremost card to adhere to the face upon reaching the end place and be directed past the throat as the picker turns.

3,690,645

APPARATUS FOR SEPARATING A STACK OF FOLDED PRINTED PRODUCTS OR PRINTED PRODUCTS BOUND AT ONE SIDE

Walter Reist, and Hans Rudolf Kuratle, both of Hinwil/Zurich, Switzerland, assignors to Ferag, Fehr & Reist AG, Hinwil, Zurich, Switzerland

Filed July 24, 1970, Ser. No. 57,953
Claims priority, application Switzerland, July 24, 1969, 11331/69
Int. Cl. B65h *3/32*
U.S. Cl. 271—29 12 Claims



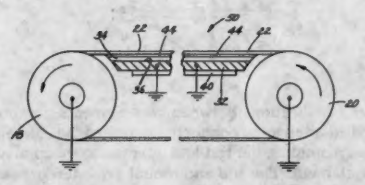
An apparatus for separating a stack of individual sheets or folded and/or one-side bound printed products with the aid of a least one separation element suitable for initiating the separation operation and acting directly at the printed product to be separated. According to the invention, the separation element possesses a substantially lance-shaped constructed leading end portion driven to move in a plane substantially parallel to the printed products with respect to the stack thereof. This separation element is destined to engage with one so-called cut side edge portion of the printed product to be separated from the stack thereof or above such cut side edge of the printed product to be separated.

3,690,646

ELECTROSTATIC CONVEYOR

James A. Kolibas, Broadview Heights, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed July 8, 1970, Ser. No. 53,053
Int. Cl. B65h *5/02*
U.S. Cl. 271—45 15 Claims



An electrostatic conveyor including a machine frame defining a feed table and a conveyor including a plurality of belts

which move across the table to convey sheet material. The moving conveyor belts, along with charging members connected to the feed table, and the feed table itself define an electrostatic generator. The generator establishes an electrostatic field between sheets on the conveyor and the feed table. The field creates an electrostatic force which urges the sheets toward the table thereby frictionally engaging the sheets and the conveyor belts so that sheets are conveyed along the table by the belts.

3,690,647

SHEET FEEDING APPARATUS

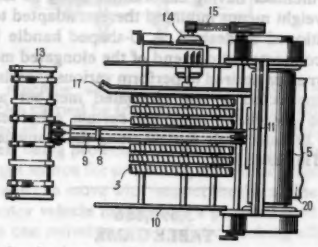
Masaharu Matsuo, No. 17-13, 3-chome, Higashikomagata, Sumida-ku, Tokyo, Japan

Filed Oct. 22, 1970, Ser. No. 83,088

Claims priority, application Japan, March 23, 1970, 45/23580

Int. Cl. B65h *9/16*

U.S. Cl. 271—49 **4 Claims**



Cardboard sheets and the like are fed to a rotary die cutter by a conveyor having a multiplicity of idling guide rollers tangential to a common horizontal plane and rotating in respective parallel planes perpendicular to the common plane and approaching the face of a stationary lateral guide at a small acute angle in the direction of sheet movement. Each sheet is pushed over the guide rollers by a dog on an endless conveyor chain and laterally deflected by the guide rollers into engagement with the stationary guide.

3,690,648

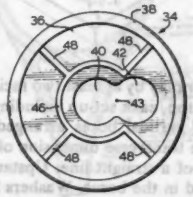
WHEEL ASSEMBLY

Francis Walter Herrington, 41 Bonnie Brae Blvd., Toronto, Ontario, and James D. McClure, 23 Darlington Crescent, Bramalea, Ontario, both of Canada

Filed April 21, 1971, Ser. No. 135,880

Int. Cl. B65h *29/20*

U.S. Cl. 271—51 **8 Claims**



An improved wheel for use in a sheet-supporting assembly for a roll of a printing press comprising a hub, an annular race formed on the periphery of the hub, a planar disc having a central opening and mounted in said hub race, and an eccentric opening formed in said disc communicating with said central opening whereby said disc can be selectively positioned on the hub in its central opening operative position for free rotation or on its eccentric opening inoperative position for restricted rotation.

3,690,649

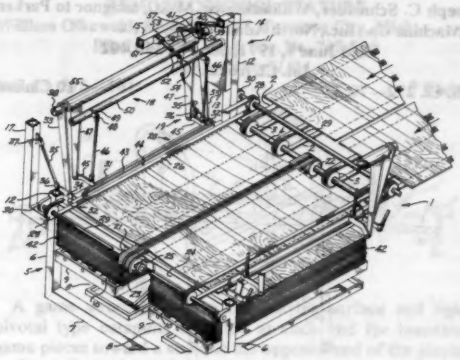
AUTOMATIC SHEET STACKER

Byron B. Brookhyser, Milton, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed March 29, 1971, Ser. No. 128,781

Int. Cl. B65h *29/68*

U.S. Cl. 271—68 **6 Claims**



A material handling device to stack thin sheet material as it comes from the output end of a suitable upstream process. The sheet stacker has a supporting conveyor surface and laterally spaced therefrom a tray and clutch bar mechanism which is operable to provide the other supporting side to the incoming sheet material. As an individual sheet enters the sheet stacker, it will be supported by the conveyor surface and tray member while at the proper instant the clutch bar will actuate and pull the sheet from the conveyor surface allowing it to fall toward the top of the stack which is being formed between the supporting conveyor surface and laterally spaced tray and clutch bar mechanism.

3,690,650

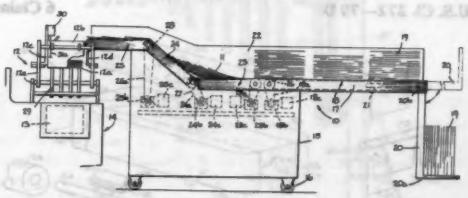
METHOD AND APPARATUS FOR FEEDING SHEET MATERIAL INTO A HOPPER

Robert E. Maier, Jr., Easton; Joseph P. McGinnis, Raubsville, and Paul R. Simon, Allentown, all of Pa., assignors to Harris-Intertype Corporation, Cleveland, Ohio

Filed Dec. 17, 1970, Ser. No. 99,066

Int. Cl. B65h *29/16, 31/38*

U.S. Cl. 271—89 **30 Claims**



Apparatus which delivers sheet material such as signatures to a hopper from which the sheet material is subsequently delivered to another apparatus such as a gatherer. A conveyor delivers the sheet material to the hopper to maintain a pile stack of sheet material therein. The material is delivered by the conveyor in bursts to facilitate the accumulation of the sheet material within the hopper. The apparatus further comprises one or more joggers which cyclically strike an edge portion of the sheet material being delivered in a period to ensure that the sheet material is evenly accumulated within the hopper.

3,690,651

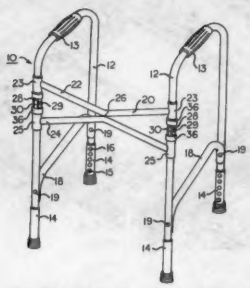
Patent Not Issued For This Number

3,690,652

FOLDABLE INVALID WALKER CONVERTIBLE FROM FIXED TO SWINGABLE WALKER

Joseph C. Schneider, Williamstown, Mass., assignor to Parker Machine Co., Inc., North Adams, Mass.

Filed June 7, 1971, Ser. No. 150,402
Int. Cl. A61h 3/00
U.S. Cl. 272—70.3 10 Claims



A foldable invalid walker is provided with a pair of locking keys each of which is mounted within a leg of the walker for movement into either a narrow slot for use of the walker as a fixed walker, or into a wide slot for use of the walker as a swingable striding walker. When the keys are positioned in their respective narrow slots, the associated legs are held against relative movement with respect to the rest of the walker. When the keys are positioned in their respective wide slots, the associated legs are pivotally mounted to the rest of the walker, thus converting the walker to a swingable walker. The walker can further be folded for storage.

3,690,653

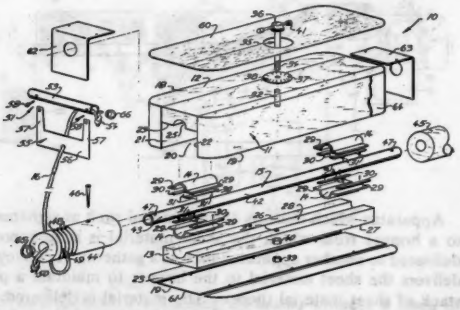
Patent Not Issued For This Number

3,690,654

PULL TYPE FRICTIONAL RESISTANCE EXERCISING DEVICE

Doublas I. Hepburn, 1390 Southwest Marine Drive, Vancouver, British Columbia, Canada

Filed April 21, 1971, Ser. No. 136,104
Int. Cl. A63b 21/22, 21/00
U.S. Cl. 272—79 D 6 Claims



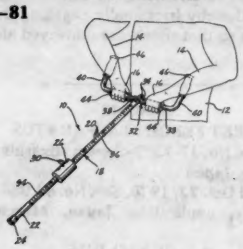
An exercising apparatus having a rotatable member to which a braking moment is frictionally applied so that tension will be developed in flexible members which are wound on the rotatable member and which are operable for alternately rotating the latter in opposite directions.

3,690,655

A MANUALLY OPERABLE CANTILEVERED TYPE EXERCISING DEVICE

Richard L. Chapman, 233 Prospect Ave., Waterloo, Iowa

Filed June 21, 1968, Ser. No. 738,942
Int. Cl. A63b 21/00
U.S. Cl. 272—81 8 Claims



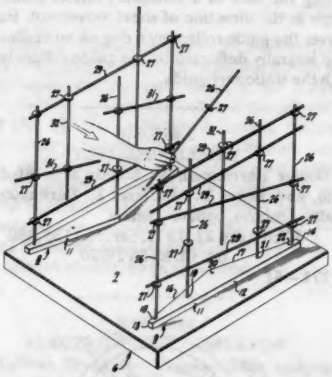
A device for performing a variety of exercises including an elongated member having calibrations along its length and a movable weight means mounted thereon adapted to be selectively positioned as desired. A U-shaped handle bar unit is rotatably connected at one end of the elongated member and may be turned as desired to perform various exercises. A strap may be connected to the elongated member and extend around the exerciser's neck for certain exercises. A cross piece may be selectively moved along the elongated member for desired leg exercises.

3,690,656

TABLE GAME

David A. Hughes, and Alan T. Hughes, both of El Cerrito, Calif., assignors to Dalan Company

Filed Jan. 6, 1970, Ser. No. 862
Int. Cl. A63f 9/00
U.S. Cl. 273—1 R 1 Claim



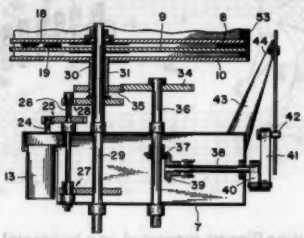
A table game for play by at least two facing players has two set-ups on a table top, each set-up including a base plate having a plurality of vertical bores arranged a distance apart about equal to the transverse dimension of a human forearm and disposed out of a straight line. Upstanding vertical rods are releasably held in the bores. Washers frictionally engage the rods in desired locations. Bars of various lengths are rested on the washers on selected sides of the rods by each player. Also, rod-like hangers are provided with washers and suspended from the bars. The players in turn reach through the adjacent set-up successively to position bars, rods and hangers on the remote set-up. Play continues until a player knocks down an excessive number of bars, hangers or rods in any assortment or his opponent has blocked all spaces in the adjacent set-up through which he can pass his forearm for further play.

3,690,657

GAME MACHINE

Masaya Nakamura, Tokyo, Japan, assignor to Kabushiki Kaisha Nakamura Seisakujo, Tokyo, Japan

Filed Jan. 16, 1970, Ser. No. 3,450
Claims priority, application Japan, Sept. 17, 1969, 44/73354; Sept. 17, 1969, 44/73355; Nov. 25, 1969, 44/93967
Int. Cl. A63f 9/14
U.S. Cl. 273—1 E 7 Claims



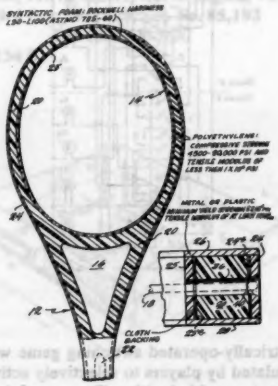
A game machine wherein three-dimensional models of motor vehicles carried by transparent discs are used for forming the image of motor vehicles on a screen, the three-dimensional models being projected obliquely and directly onto the screen. A light source for projecting the motor vehicle models onto the screen can move with respect the discs. The discs carrying the motor vehicle models and a pictorial road and their drive means can swivel to give realistic banking effect to the screen.

3,690,658

TENNIS RACKET

John G. Howe, Baltimore, Md., assignor to AMF Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 11,547, Feb. 16, 1970, abandoned. This application May 25, 1970, Ser. No. 40,171
Int. Cl. A63b 49/10
U.S. Cl. 273—73 C 2 Claims



A racket construction having a central dampening core sandwiched between skins of high strength material, the skins serving as the racket faces. In the bow portion of the racket at least one web, having higher strength characteristics than the core, extends normal to the skins. Layers of elastomeric material are utilized between the skins and the core to assist in laminating the core, skins and web into a unitary structure.

3,690,659

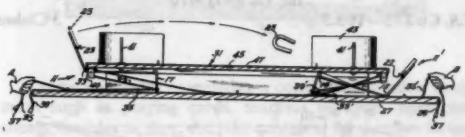
Patent Not Issued For This Number

3,690,660

HORSESHOE CATAPULTING APPARATUS HAVING A REMOTE CONTROL FEATURE

William Olkowski, Rt. 5, Box 107, Traverse City, Mich.

Filed Feb. 28, 1968, Ser. No. 709,031
Int. Cl. A63b 71/04
U.S. Cl. 273—101 7 Claims



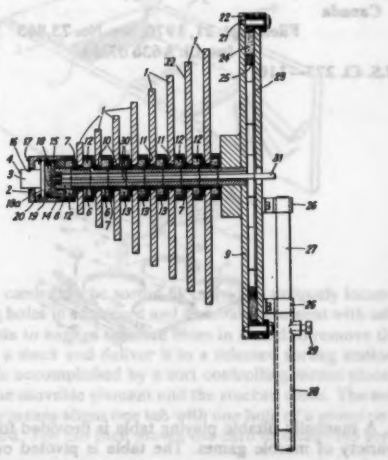
A game structure with a flat playing surface and rigid, pivotal type catapults mounted at each end for launching game pieces toward a stake at the opposite end of the playing surface. Control cords are attached to each catapult for remote manual actuation of each catapult from both ends of the playing surface.

3,690,661

AUTOMATIC HIT INDICATING SHOOTING TARGET

Armin Scharz, and Oskar Scharz, both of Rugenparkstrasse 6, 3800 Interlaken (Canton of Berne), Switzerland

Filed Feb. 1, 1971, Ser. No. 111,313
Claims priority, application Switzerland, Feb. 12, 1970, 2068/70
Int. Cl. F41j 5/00
U.S. Cl. 273—102.2 R 5 Claims



There is disclosed a shooting target for the automatic indication of hits, comprising a number of different size target bodies having impact surface for the fired projectiles, a base plate, and a central column for mounting said target bodies behind one another and independently movable with respect to one another to a limited extent at said base plate. Sensing elements responsive to the relative movement of the target bodies serve to influence an electrical current flowing in a current circuit associated with each target body, said sensing elements being arranged between said individual target bodies.

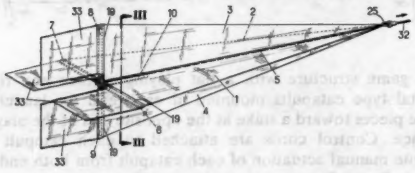
An intermediate plate is mounted to be movable to a limited extent relative to the base plate and is arranged between the target bodies and the base plate. Additional sensing elements are arranged substantially along a circular path between said intermediate plate and said base plate for indicating the position of the fired shot.

3,690,662

TOWED AERIAL TARGET

Joseph Pasqualini, 82, Rue du Parc de la Lande, 94 Plessis-Trevise, France

Filed Dec. 4, 1970, Ser. No. 95,161
Claims priority, application France, Jan. 8, 1970, 7000601
Int. Cl. F41j 9/10
U.S. Cl. 273—105.3 **3 Claims**



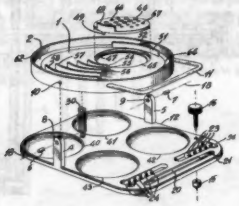
Target comprises at least three right triangular panels of flexible sheet material with their long sides fastened together. A collapsible frame comprises a longitudinal bar running along the sides attached together and a transverse bar extending along the rear edge of each panel pivotally connected to the rear end of the longitudinal bar.

3,690,663

MARBLE GAME DEVICE WITH REMOVABLE INSERTS

Paul Boulva, 4040 Wilson Ave., Montreal, 253 Quebec, Canada

Filed Sept. 21, 1970, Ser. No. 73,863
Int. Cl. A63b 67/14
U.S. Cl. 273—110 **8 Claims**



A manually tiltable playing table is provided for playing a variety of marble games. The table is pivoted on a central horizontal axis. A spring normally holds the disk,which provides the playing surface, tilted so that the side carrying a playing handle is raised. The playing surface is about 10 inches in diameter, and enclosed by a circumferential wall. Opposite the starting position, which is at one end of the tilt axis, are a number of curved channels to turn rolling marbles back so that further rolling can be directed generally towards other by sectoral vanes. An array of one or more deflectors or traps and one or more goals is located between the curved channels and the starting position. The said array is carried by a removable disk and other arrays may be substituted to vary the game.

3,690,664

TIC-TAC-TOE GAME

Gary F. Hauke, 40 E. Main St., P. O. Box 281, New Albany, Ohio

Filed Oct. 26, 1970, Ser. No. 83,845
Int. Cl. A63b 67/14
U.S. Cl. 273—127 D **8 Claims**

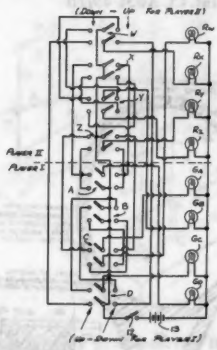
A game using flippers supported on a horizontal support (1) with different insignia in the upper and lower halves, or (2) with different insignia in the upper and lower halves and at the midpoint. By rolling a ball and turning the flippers, opponents strive to bring all of their insignia in line in the top or bottom halves of the flippers.

3,690,665

BOARD GAME APPARATUS

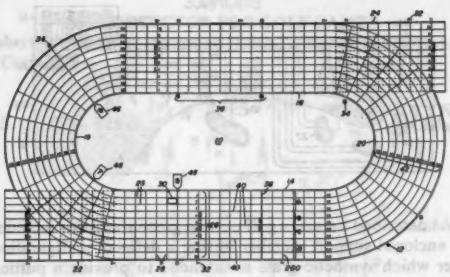
Norman Becker, 5 Boar Court, Suffern, N.Y.

Filed Feb. 8, 1971, Ser. No. 113,131
Int. Cl. A63f 3/00
U.S. Cl. 273—130 AB **3 Claims**



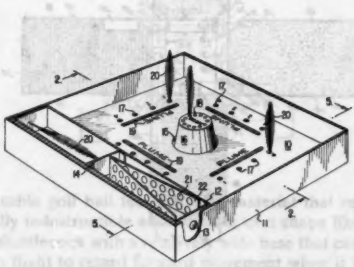
An electrically-operated switching game wherein switches are manipulated by players to selectively activate light bulbs. Each player is provided with a like row of double-pole, double-throw switches and a series of light bulbs, the bulbs associated with the players on opposing sides differing in color. The switches and bulbs are so interconnected that each switching action, which may be either in the up or down direction, results in a change in the status of a pair of bulbs, one on each side, such that a previously lit bulb is turned off or vice versa. The outcome of the game is indicated by an unbroken series of lit bulbs on either side, or any other predetermined light pattern depending on the rules.

3,690,666
HORSE RACING BOARD GAME APPARATUS
John R. Seitz, 915 Wheaton Dr., Lancaster, Pa.
Filed Nov. 24, 1970, Ser. No. 92,338
Int. Cl. A63f 3/00
U.S. Cl. 273—134 CH 12 Claims



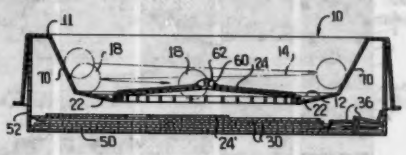
A horse racing game including a game board inscribed with a simulated racetrack, and a plurality of cards inscribed with various groups of numbers which indicate horse performance, a particular horse's rating, key numbers, and index numbers. A race action board has various tables and charts which are used, in combination with the horse performance cards, to determine the amount each marker representing a horse is to be moved along the simulated racetrack. A random number selector means is used to determine the key numbers and various finder numbers which are used with a plurality of finder tables which are, in turn, used to determine the track condition, race time, odds for each horse, etc. A race charting sheet is used to record all pertinent data during the preparation for and running of each race.

3,690,667
BOARD GAME APPARATUS
Richard D. Smith, 913 N. Liberty St., Arlington, Va.
Filed Oct. 29, 1970, Ser. No. 85,193
Int. Cl. A63f 3/00
U.S. Cl. 273—134 B 10 Claims



A board game in which a tapered hollow body is positioned and confined in an inverted posture within a game box by the gameboard, said body effectively simulating an upstanding hat. The top of the hat is multiply apertured to receive slender implements such as feathers placed therein according to chance, either directly or by incremental movement through a series of gameboard apertures as designated by shaker box dispensed tokens having appropriate indicia thereon.

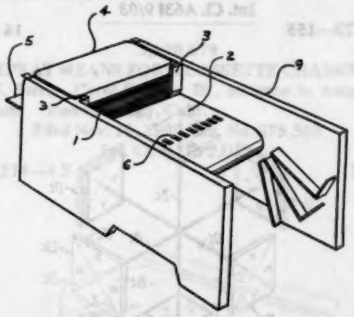
3,690,668
GAME APPARATUS
James F. Weeks, Macon, and Ray T. Bustos, Atlanta, both of Ga., assignors to said Weeks, by said Bustos
Filed Nov. 14, 1969, Ser. No. 876,886
Int. Cl. A63f 5/02
U.S. Cl. 273—138 R 1 Claim



A game apparatus comprising a container for game equipment such as playing cards, markers or discs, instruction sheets, marbles or dice, etc., the container lid member including a novel track or raceway for a projectile, such as marble, which is movable into one of a plurality of stalls arranged adjacent to score-indicating or move-indicating indicia means.

3,690,669
Patent Not Issued For This Number

3,690,670
CARD SORTING DEVICE
John Cassady, 11 Mira Monte Rd., Orinda, Calif., and George Coad, 1697 Castle Hill Rd., Walnut Creek, Calif.
Filed Dec. 15, 1969, Ser. No. 885,283
Int. Cl. A63f 1/14
U.S. Cl. 273—149 P 8 Claims

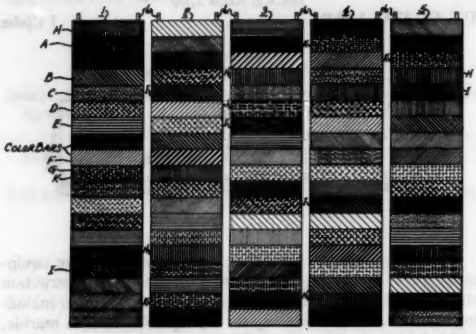


Stacked cards may be sorted by providing uniquely located identifying holes in each card and a movable element with tabs that are able to engage selected holes in a card to remove the card from a stack and deliver it to a selected sorting station. Selection is accomplished by a sort controlling means placed between the movable element and the stacked cards. The sort controlling means aligns one tab with one hole of a group on a stacked card. The tab then moves the card to a selected sorting station.

3,690,671
EDUCATIONAL COLOR ASSOCIATION GAME
Linda F. Slutsky, 5700 Bunker Hill Apt. 806, Pittsburgh, Pa.
Filed March 22, 1971, Ser. No. 126,587
Int. Cl. A63f 9/08; G09b 19/00
U.S. Cl. 273—153 R 6 Claims

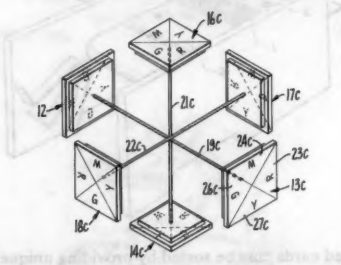
An educational color association game wherein a plurality of panels, usually three or more, are each provided with a number of different color bars adjacently arranged thereon. A

selection of the different color bars are common to all panels wherein the object of the game is to find the color or colors which are common to all panels and in addition to find a color



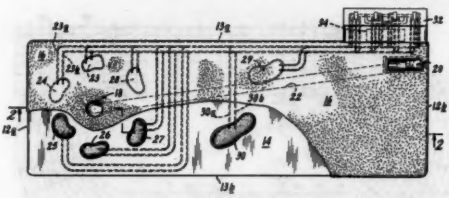
that is shown only once on all panels. The difficulty in matching the colors arises due to the camouflage effect given to the common color bars by reason of their association with different colors from one panel to the next.

3,690,672
PUZZLE
Allen E. Dreyer, Richmond, Calif., assignor to Universal Research Company, Berkeley, Calif.
Filed July 22, 1971, Ser. No. 165,278
Int. Cl. A63f 9/08
U.S. Cl. 273—155 **16 Claims**



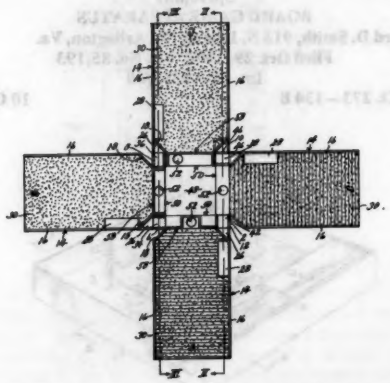
A polyhedral puzzle is provided which is assembled from pairs of faces held to each other by an elastic member swivelably attached at the midpoint of the face, with said faces all having recessed edge configurations and being slightly but not perceptively different from each other, and formed to assemble into a regular polyhedron. A typical assembled puzzle is a cube formed with three pairs of opposed faces attached through elastic members with each face having a step-like recessed portion at the edge. Each of the opposed face members are alike and formed so that one pair of faces will nest completely into the other faces, another pair will completely overlap the other faces, and the third pair will partially nest and partially overlap. Another form of puzzle also contains design configurations on the faces which must be oriented as the puzzle is assembled in order to increase the difficulty of assembly thereof.

3,690,673
SELECTIVELY CONTOURABLE PUTTING GREEN
Peter W. Occhipinti, 672 Downing St., Teaneck, N.J.
Filed Aug. 11, 1971, Ser. No. 170,700
Int. Cl. A63b 69/36
U.S. Cl. 273—176 H **10 Claims**



As described herein, a golf putting green simulator includes an enclosed support member having a defined configuration over which synthetic grass is extended to provide a putting surface. A hollow putting cup is mounted in the support member adjacent one end thereof and communicates with a receptacle formed in the support member at the other end thereof through an inclined conduit. Randomly spaced between the synthetic grass and the upper surface of the support member are a plurality of irregularly shaped air sacks, each sack containing an air inlet port and an air outlet port. A console containing an air compressor and a plurality of supply and exhaust valves coupled to the inlet and outlet ports of the air sacks is further provided to enable the golfer to selectively expand and deplete the air sacks to thereby modify the contour of the synthetic grass putting surface.

3,690,674
PUTTING PRACTICE DEVICE
Cecil R. Taylor, 2921 R. D. Mize Rd., Independence, Mo.
Filed Sept. 28, 1971, Ser. No. 184,360
Int. Cl. A63b 67/02, 57/00
U.S. Cl. 273—176 G **10 Claims**



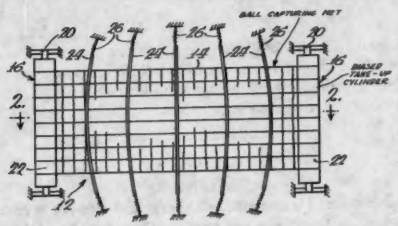
A putting practice device consisting of a square box adapted to rest on a floor, four ramps inclined upwardly from the floor respectively to the four upper edges of the box, and up which a golf ball is to be putted in sequence, a target plate overlying the box at the upper end of each ramp, and having an aperture therein providing a target hole through which the ball must fall, hazards guarding the holes, passageways in the box beneath each of the target plates and each operable to convey a ball to the successive ramp, except beneath the fourth plate which delivers the ball to a special container indicating

completion of the course, and a central trap in the box adapted to receive a ball passing over any of said target plates without passing through the hole thereof, and operable to return any such ball to the first ramp of the series. The ramps, target plates and hazards are detachable and interchangeable to vary the putting conditions.

3,690,675
SPIN DETECTOR FOR GOLF GAMES

Robert M. Conklin, Muskegon, Mich., assignor to Brunswick Corporation

Filed Dec. 14, 1970, Ser. No. 97,554
Int. Cl. A63b 69/36
U.S. Cl. 273—185 R 6 Claims

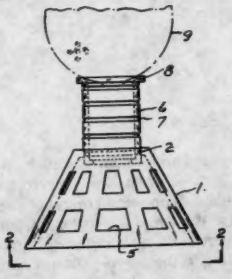


A golf game including a ball capturing net resiliently suspended in spherical form relative the tee point and biased laterally by two side take-up cylinders. Deflection of the net by the momentum and spin of an impacting ball unwinds the cylinders. The outputs of a piezo-electric signal generators activated by the unwinding of each cylinder are integrated, compared and the difference displayed by a galvonometer calibrated to indicate slice or hook of the ball.

3,690,676
GOLF BALL TEE

Frank Costa, 1217 Tynsfield Road, Oakmont, Pa.

Filed Jan. 26, 1971, Ser. No. 109,764
Int. Cl. A63b 57/00
U.S. Cl. 273—202 1 Claim



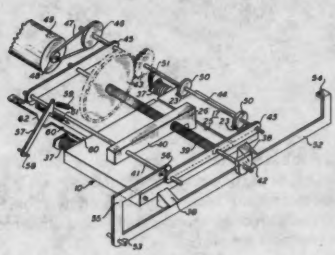
A reusable golf ball tee of plastic material that renders it practically indestructible and which is of a shape like a badminton shuttlecock with a relatively wide base that constitutes a skirt in flight to retard forward movement when it is struck by the head of a golf club. The skirt portion of the golf ball tee is perforated to render it of light weight and suitably ribbed to reinforce the same sufficiently to withstand the severe service to which it is exposed. Another feature is an adjustable seat on which the golf ball rests in the form of a tubular member having external spaced grooves that interact with a lip on the skirt member to maintain the different vertical positions that determine the height of the golf ball when it is mounted thereon. Further, the skirt member has a considerable surface area on which advertising copy is printed and thereby they can be furnished free to golfers.

3,690,677
Patent Not Issued For This Number

3,690,678
CASSETTE AND DICTATING MACHINE FOR BELT TYPE RECORDS

Thomas J. Gaven, Livingston, and Bruce N. Whitlock, Morris Plains, both of N.J., assignors to McGraw-Edison Company, Elgin, Ill.

Filed Sept. 9, 1969, Ser. No. 856,276
Int. Cl. G11b 23/06, 15/24, 21/16
U.S. Cl. 274—4 J 2 Claims

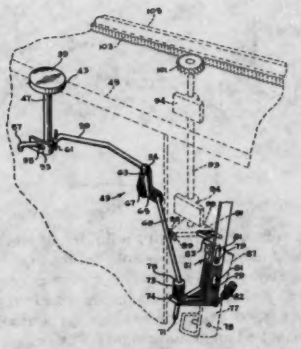


A cassette for belt record type dictating machines comprises a flat rectangular box with means supporting a magnetic belt record for revolving movement. The cassette has an opening for a drive coupling with the record and has a transverse opening for traveling engagement of a recorder-reproducer head with the record. The dictating machine is adapted for receiving the cassette and for causing the drive means to become coupled to the belt record and the traveling head to slidably engage the record when the cassette reaches a mounted position and is latched.

3,690,679
REPEAT MEANS FOR A CASSETTE CHANGER

Glenn E. Sterly, Carol Stream, Ill., assignor to Ampex Corporation, Redwood City, Calif.

Filed Nov. 10, 1969, Ser. No. 875,305
Int. Cl. G11b 23/12
U.S. Cl. 274—4 F 2 Claims

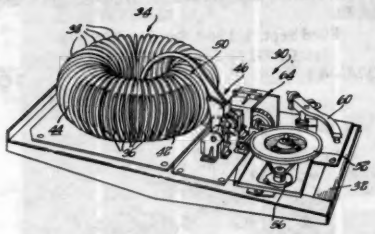


A repeat playback capability is provided for cassette changers having a magazine for storing a series of cassettes therein. Preferably, a manually operable selector is provided to disable a feed mechanism for the magazine so that the magazine remains stationary and the same cassette is recycled for playing until the repeat selector is returned to a non-repeat position.

3,690,680
ELECTROMECHANICAL SELECTOR UNIT

Frank B. Lumney, Tonawanda, N.Y., and Ronald P. Eberhardt, Amherst, N.Y., assignors to The Wurlitzer Company, Chicago, Ill.

Filed March 1, 1967, Ser. No. 619,686
Int. Cl. G11b *17/22*
U.S. Cl. 274—10 D 11 Claims



This invention relates generally to an automatic phonograph, and more particularly to a control apparatus for selecting a predetermined record or a predetermined series of records from a record storage magazine in which a large number of records are stored.

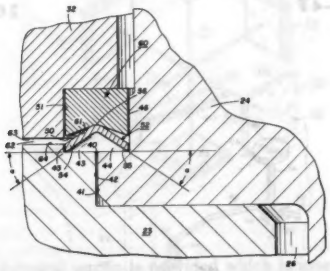
A series of selector pins or levers is arranged in an arc, and a moving electromagnet acts on selected pins corresponding to selected records to move and set the pins while the electro magnet is moving.

3,690,681
Patent Not Issued For This Number

3,690,682
HIGH PRESSURE SEALING MEANS

Homer E. Ferrill, Alexandria, La., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed May 18, 1970, Ser. No. 38,425
Int. Cl. F16j *15/08*
U.S. Cl. 277—102 10 Claims



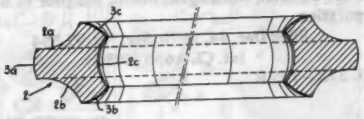
A sealing means for providing a fluid tight joint between assembled components of valves adapted for high temperature-high pressure service. The sealing means is comprised of a metallic ring, V-shaped in radial cross section through its annulus and engaged at its outer apex by a similarly shaped recessed surface of an annular rigid follower. Forcing the follower axially against the ring spreadingly deforms the ring in a radial direction into a firm sealing engagement against opposing walls of adjacent components.

3,690,683
Patent Not Issued For This Number

3,690,684
GASKETS

Rene Lansaque, Meyzieu, Rhone, and Georges Bonnefond, Tassin-la Demi-Lune, Rhone, both of France, assignors to Societe Chimique De Gerland, Lyon, Rhone, France

Filed Oct. 27, 1970, Ser. No. 84,314
Int. Cl. F16j *15/10*
U.S. Cl. 277—207 2 Claims

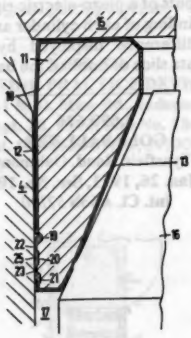


A gasket insertable in a pipe joint has a toroidal body with three circular grooves of concave profile centered on the body axis and separated by broad annular ribs of convex profile curved about its centerline.

3,690,685
SEALING RING

Horst Porner; Hans-Peter Schabert, and Robert Weber, all of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany

Filed April 3, 1970, Ser. No. 25,460
Int. Cl. F16j *15/08*
U.S. Cl. 277—235 A 10 Claims



Sealing ring includes an annular member of creep-resistant material formed with at least one pair of projecting webs defining an annular depression therebetween, and metal material received in the annular depression, the metal material having the properties of creeping under given stress conditions and of adhering to the creep-resistant material of the annular member.

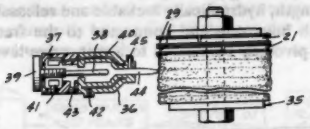
3,690,686
PISTON WITH SEAL HAVING HIGH STRENGTH MOLYBDENUM ALLOY FACING

Herbert F. Prasse, Town and Country, and Harold E. McCormick, Ballwin, both of Mo., assignors to Ramsey Corporation, St. Louis, Mo.

Filed Aug. 11, 1969, Ser. No. 849,018
Int. Cl. B23p *3/24*; F02f *5/00*
U.S. Cl. 277—235 A 7 Claims

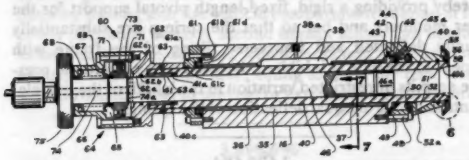
Piston rings, including compression and oil control rings, for internal combustion engine pistons, having a bearing face of an alloy formed in situ on the ring from a plasma jet stream. The alloy is a high strength molybdenum alloy composed of molybdenum and a metal such as nickel, chromium, boron, and silicon. The coating has exceptionally high bond strength

and possesses a higher tensile strength than present in heretofore used piston ring facings comprising molybdenum as the



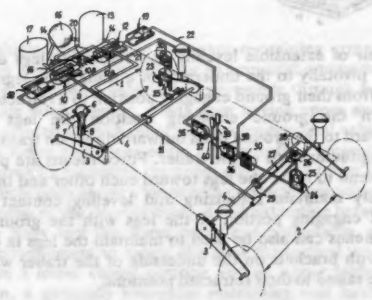
facing material. The piston rings are particularly useful in operation of heavy duty engines.

3,690,687
MACHINE TOOL
Fred L. Moe, 4380 Brookside Ave., Minneapolis, Minn.
Filed July 6, 1970, Ser. No. 52,522
Int. Cl. B23b 5/22
U.S. Cl. 279—4 **2 Claims**



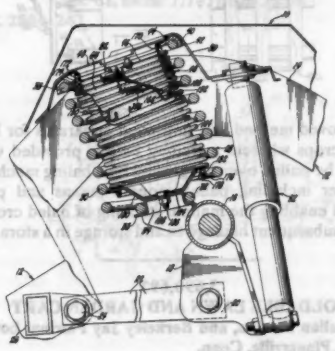
A machine tool which provides rotative movement to the work piece, including a source of power driving a spindle which spindle includes a collet receiving draw bar with an air driven and controlled piston attached to the piston for automatically shifting the draw bar inwardly into the spindle whereby the collet is closed about the work piece. The entire spindle unit including the draw bar shifting piston is rotatably mounted for rotation within a mounting base.

3,690,688
AUTOMOTIVE HYDROELASTIC SUSPENSION WITH LEVEL CORRECTION
Jacques Fleury, 117/167 quai Andre Citroen, Paris, France
Filed Nov. 12, 1970, Ser. No. 88,537
Int. Cl. B60g 17/00
U.S. Cl. 280—6 H **7 Claims**



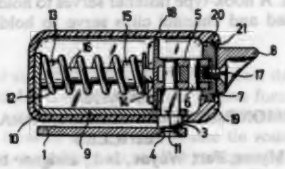
Hydro-elastic suspension system of vehicle, comprising hydraulic receiving devices interposed between the body of the vehicle and the wheels, and for each train of wheels a hydraulic distributor connected to the corresponding hydraulic receiver and adapted to either connect said receivers to a source of fluid under pressure, or isolate them, or connect them to the exhaust, as well as a device for correcting the ground clearance of the vehicle body, this correcting device comprising an elastic operative connection, with delay-action means, disposed between the wheels of the vehicle and the corresponding distributor, characterized in that said elastic operative connection comprises a hydraulic system for transmitting the wheel movements to the movable members of said distributors, with hydraulic time-lag means.

3,690,689
COMBINATION VALVE FOR CONTROLLING TWO PRESSURE SOURCES
Wayne V. Fannin, Dayton, and Harry C. Buchanan, Jr., Centerville, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed April 21, 1971, Ser. No. 136,116
Int. Cl. B60g 17/04
U.S. Cl. 280—6 H **6 Claims**



In preferred form, a combination control valve that is carried by the end closure member of a vehicle leveler unit. A resilient, unitary valve element includes a movable seal surface supported on an annular seat formed around a first port in the end closure of the leveler. It also includes a second port adapted to be connected to a vacuum source and a third port adapted to be connected to atmosphere. A nozzle valve seat on the valve element surrounds the third port. A movable valve actuator engages the nozzle valve seat to position the valve element to open and close the first and third ports to regulate the pressure in the leveler unit and control the vehicle height.

3,690,690
TOE-OR HEEL-HOLDING DEVICE FOR SAFETY SKI BINDINGS
Hannes Marker, Hauptstrasse 51-53, Garmisch-Partenkirchen, Germany
Filed June 23, 1970, Ser. No. 49,004
Claims priority, application Germany, July 29, 1969, P 19 38 567.2
Int. Cl. A63c 9/00
U.S. Cl. 280—11.35 T **5 Claims**



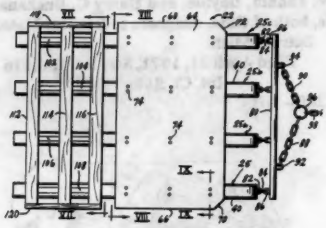
The device comprises a baseplate adapted to be secured to the ski and a soleholder which is movable against a resistance presented by a spring. An envelope encloses and seals the entire device except for the baseplate and the soleholder.

3,690,691

METHOD AND APPARATUS FOR HARVESTING BALED CROPS

Dwight F. Kampe, 1310 Sherwood Rd. Rt. 2, Williamston, Mich.

Filed Dec. 21, 1970, Ser. No. 100,096
Int. Cl. B62b 13/06
U.S. Cl. 280—24 2 Claims



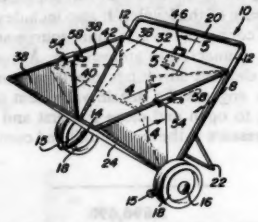
An improved method and improved apparatus for harvesting baled crops wherein a trailing bale is provided which is adapted to be pulled over the ground by a baling machine, the bale stacker including pallet support means and platform means, and enabling the manual stacking of baled crops onto pallets for subsequent haulage to and storage in a storage area.

3,690,692

FOLDABLE LAWN AND GARDEN CART

Berkeley Julian Florian, and Berkeley Jay Florian, both of 88 West St., Plantsville, Conn.

Filed Nov. 16, 1970, Ser. No. 89,695
Int. Cl. B62b 11/00
U.S. Cl. 280—36 C 10 Claims



A foldable two-wheeled low-slung lawn and garden cart characterized by a hopper-type wheelbarrow, that is, an adaptation wherein the barrow or receiver comprises panel-type front and back walls whose lower flanged ends are hingedly joined. The opposed vertical side walls are made up of paired triangular panels whose outer marginal edges are hingedly joined to coacting marginal flanges on the front and back walls. The inner vertical edges of these side wall panels are hingedly joined and when collapsed inwardly they are sandwiched with requisite nicety between the folded front and back walls. A hook-type fastener serves to hold the collapsible walls closed and channel clips serve to hold the side walls open.

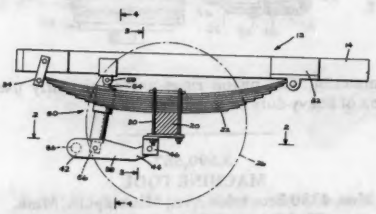
3,690,693

TORSION BAR STABILIZING APPARATUS FOR VEHICLES

Lester L. Myers, Fort Wayne, Ind., assignor to Mobile Aerial Towers, Fort Wayne, Ind.

Filed May 11, 1970, Ser. No. 36,048
Int. Cl. B60g 11/46
U.S. Cl. 280—24 R 14 Claims

Torsion bar stabilizing apparatus for a Vehicle which includes a frame, a transversely extending axle, and transversely spaced-apart springs respectively connecting the axle to the frame. An elongated, rigid, transversely extending bar has a pair of lever members rigidly secured to its opposite ends, the lever members being pivotally connected to the axle. A pair of variable length, hydraulically lockable and releasable link elements each have one end connected to the frame and the other end pivotally connected to a respective lever member.



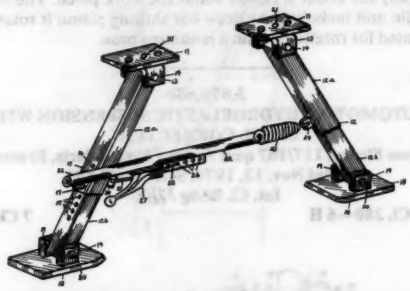
Application of hydraulic pressure to the link elements adjusts and locks the lengths thereof to a predetermined length thereby providing a rigid, fixed-length pivotal support for the lever members and bar so that the springs are substantially equally deflected and transverse tilting of the frame with respect to the axle is inhibited. Release of the hydraulic pressure permits unrestricted variation in the length of the link elements and thus unequal deflection of the springs.

3,690,694

TRAILER STABILIZER

Robert R. Herndon, 207 Short Mountain St., Smithville, Tenn.

Filed Jan. 4, 1971, Ser. No. 103,784
Int. Cl. B60s 9/02
U.S. Cl. 280—150.5 6 Claims



A pair of extensible leveling and stabilizing legs are connected pivotally to the underside of a trailer, the legs can be raised from their ground engaging position to a retracted position, in the ground engaging position the legs extend downward to the ground in an outward direction transverse to the longitudinal axis of the trailer. Force means are provided which tend to move the legs toward each other and thus continuously maintain stabilizing and leveling contact of the ground engaging portion of the legs with the ground. The force means can also be used to maintain the legs in engagement with brackets on the underside of the trailer when the legs are raised to their retracted positions.

3,690,695

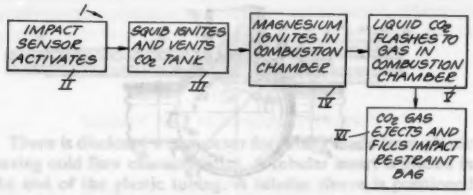
PERSONNEL RESTRAINT SYSTEM FOR VEHICULAR OCCUPANTS

John Leslie Jones, Sr., 1070 Glen Oaks Blvd., Pasadena, Calif.

Filed Aug. 14, 1970, Ser. No. 63,750
Int. Cl. B60r 21/06
U.S. Cl. 280—150 AB 15 Claims

The personnel restraint system has an accordion pleated impact restraint bag, which is folded flat in a transverse U-bend

and disposed in a case, which can be fixed under the vehicle instrument panel, adjacent to the front seat. In a quickly acting process an adjacently disposed tank of liquid carbon dioxide charge, is rapidly discharged through a ruptured tank sealing metal membrane on activating an impact sensor and firing a squib. Concurrently magnesium metal powder is blown into a metal combustion chamber duct and rapidly oxidized. The



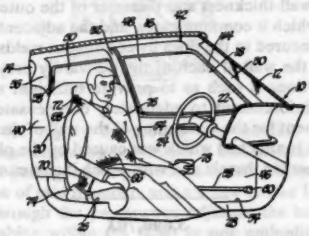
heat of combustion is utilized to vaporize the discharged liquid carbon dioxide to gas in the chamber duct. The heated carbon dioxide gas is ducted into the folded impact bag, rapidly expanding the bag into the vehicle compartment volume in front of the personnel seats. A second impact sensor can operate a second carbon dioxide tank which vents into the atmosphere adjacent to the gasoline tank, acting to flood the tank vicinity with carbon dioxide, to prevent or extinguish a gasoline fire.

3,690,696

VEHICLE BODY PASSIVE OCCUPANT RESTRAINING ARRANGEMENT

Clark Lincoln, Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed April 20, 1971, Ser. No. 135,625
Int. Cl. B60r *21/02*
U.S. Cl. 280—150 SB **2 Claims**



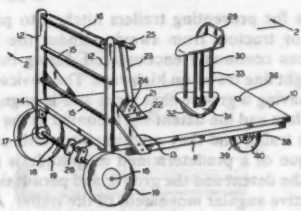
A vehicle body passive occupant restraining arrangement includes a vehicle body defining an occupant compartment in which is mounted a vehicle seat accessible through a vehicle body side door opening, a side door having upper and lower panels pivoted to each other about a longitudinal vehicle axis at their lower and upper edges respectively, a hinge arrangement pivotally mounting the upper edge of the upper panel to the vehicle body about a longitudinal vehicle axis adjacent the upper edge of the door opening, a link extending between the vehicle body and the lower panel and cooperable with the hinge arrangement to mount the door for vertical movement between a lower closed position and an upper folded open position, a generally triangular restraining vest having two portions respectively secured adjacent upper and lower inboard portions of the seat and having a generally elongated belt portions, an inertia retractor receiving the belt portion and slidably mounted on a lower inboard edge portion of the lower panel of the door for longitudinal movement with respect to the vehicle body, and a drive mechanism for moving the retractor along the door between forward and rearward positions in response to door opening and closing movement. During upward door opening movement, the drive mechanism moves the retractor to the forward position to move the restraining vest to an easy-enter position with the belt portion pointing upwardly and forwardly of the vehicle body and allowing convenient occupant access to the seat. During downward door closing movement, the drive mechanism moves the retractor to the rearward position to move the restraining vest to a restraining position across a seated occupant with the belt portion pointing downwardly and rearwardly of the vehicle body and retracted by the retractor to maintain the restraining vest in a taut condition across the occupant.

3,690,697

HAND PROPELLED VEHICLES

John S. Bohanski, 401 Union St., Stevens Point, Wis.

Filed May 25, 1970, Ser. No. 40,090
Int. Cl. B62m *1/14*; B62k *21/00*
U.S. Cl. 280—247 **1 Claim**



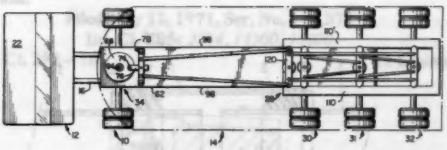
This invention provides a vehicle which is propelled by a hand operated lever. The steering arrangement is attached to the operator's seat for turning a swivel wheel as the operator turns his body. A pinion and gear arrangement turns the swivel wheel to guide the vehicle in a direction in which a person driving the vehicle instinctively turns when confronted with an obstacle in his path.

3,690,698

STEERING ASSEMBLY FOR TRAILERS

Carl E. Humes, 907 Franklin Ave., Steubenville, Ohio

Filed Nov. 30, 1970, Ser. No. 93,685
Int. Cl. B62d *13/02*
U.S. Cl. 280—426 **4 Claims**



An improved steering mechanism for a tractor driven plural wheeled extendable trailer wherein the motive force for steering the trailer positively extends from the fifth wheel of the tractor in the form of readily changeable tie rods to one or more turntable supporting assemblies structurally associated with one or several steerable axle assemblies supporting the trailer with means being provided for varying and limiting the degree of turning movement of each turntable assembly to maintain all of the steerable axle assemblies in proper steering relation to the tractor regardless of the operating length of the trailer.

3,690,699

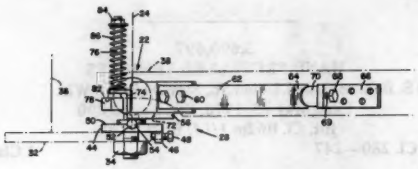
ANTI-SWAY DEVICE FOR TRAILER HITCHES

M. Arthur Derr, Jr., 17 Richard Court, Orinda, Calif.

Continuation-in-part of Ser. No. 21,635, March 23, 1970, abandoned. This application Aug. 12, 1970, Ser. No. 63,191

Int. Cl. B60d 1/06; B62d 53/00

U.S. Cl. 280—446 B 41 Claims



A device for preventing trailers hitched to passenger automobiles or tractors from swaying under the influence of lateral forces commonly encountered during relatively high speed straight line travel on highways. The device comprises a flat plate having a groove that faces and is engaged by a detent. The plate and the detent are mounted to the towing vehicle and the trailer and they are biased towards each other so that a torque of a predetermined magnitude is necessary to disengage the detent and the groove and permit sideway swaying, or relative angular movement of the trailer. After the detent is disengaged the necessary force to cause additional angular movements is reduced. The anti-sway device can be mounted to and used with conventional, already installed trailer hitches.

3,690,700

Patent Not Issued For This Number

3,690,701

SLEEVE FOR CONNECTING PIPES

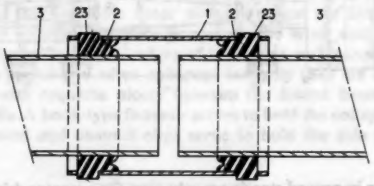
Jean Gramain, Paris, France, assignor to Pneumatiques, Caoutchouc Manufacture et Plastiques Kleber Colombes, Colombes, France

Filed Sept. 29, 1970, Ser. No. 59,258

Claims priority, application France, July 31, 1969, 6926434

Int. Cl. F16l 17/00

U.S. Cl. 285—111 3 Claims



In a connecting sleeve fitting around adjacent ends of two aligned pipes and comprising at each end a resilient axially extending fluid tight sealing member gripped between the sleeve and the pipes, the sleeve has near each end circumferentially distributed apertures into which fit projections extending radially from a flange on the external surface of the sealing member.

3,690,702

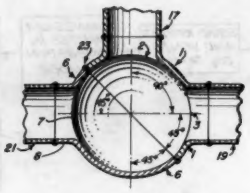
CONNECTION ASSEMBLY FOR FLUID PRESSURE LINES

Charles H. Moore, 645 Matanzas Court, Fort Myers Beach, Fla.

Filed July 28, 1971, Ser. No. 166,659

Int. Cl. F16l 13/02

U.S. Cl. 285—156. 4 Claims



A metallic pipe connector for T's, crosses, bends, or a combination of such, and either full size or reducing, consists essentially of a pair of substantially identical semispherical shells in opposed relationship with their adjoining edges secured together with a continuous weld, thus forming a hollow sphere. This hollow sphere is provided with at least two circular openings therein, the axes of which are spaced from the adjoining edges of the semispherical shells at an angle of approximately 45°. The metal surrounding at least one, and in some instances all, of the circular openings is displaced into an outwardly projecting or "flued" portion; and the wall-thickness of the sphere with respect to the diameter of the openings therein being so arranged that there is sufficient metal between the openings to adequately compensate by way of reinforcement for the weakening of the walls of the sphere caused by the initial placing of the aforementioned openings therein. A pipe abuts the outer end of the circular collar "flued" portion to thus communicate with the interior of the sphere, the internal diameter and wall-thickness of each of the pipes corresponding to the wall-thickness and diameter of the outer end of the flue with which it communicates; and the adjacent ends of the pipes are secured to the flues by continuous welds. The cross-section of the wall of each of the outwardly projecting or "-flued" portions is such as to provide sufficient metal in the area of reinforcement to adequately compensate by way of reinforcement for the weakening of the wall of the semisphere to which it is attached which was caused by the placing of the circular opening therein and with which it communicates.

3,690,703

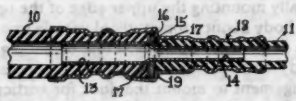
COUPLING FOR HOSES OF DIFFERENT DIAMETERS

Virgil Philipps, Chicago, Ill., assignor to Federal Auto Products Co., Inc., Chicago, Ill.

Filed Dec. 2, 1970, Ser. No. 94,502

Int. Cl. F16l 33/20

U.S. Cl. 285—177 1 Claim



A coupling for hoses of different diameters in which the ends of the hoses abutting a sealing washer disposed between the ends of the hoses with the washer mounted upon an insert tube of two integral lengths of different diameters to provide a shoulder intermediate the ends of the insert tube to hold a metallic washer upon the insert tube between the adjacent ends of the hose lengths to effect a tight seal, and with a one-piece sleeve surrounding the end portions of the hoses and circumferentially crimped to provide a firm connection between the two end portions of the hoses.

3,690,704

PLASTIC TUBING CONNECTOR

Frank L. Reynolds, Monroe; Alfred C. Langer, Brookfield, and Ellsworth Tweedie, Milford, all of Conn., assignors to Frigitronics of Conn., Inc., Shelton, Conn.

Filed Sept. 9, 1970, Ser. No. 70,751
Int. Cl. F16l *33/00*
U.S. Cl. 285—244 9 Claims

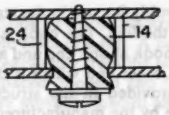
There is disclosed a connector for tubing made from plastic having cold flow characteristics. A tubular insert is placed in the end of the plastic tubing. A tubular sleeve is positioned over the tube. Elastomeric O-rings are mounted on the tubing at the end of the sleeve. An internally threaded tubular coupling member is threaded onto the plastic tubing, compressing the O-rings between the member and the end of the sleeve. The coupling member is secured to the sleeve to retain the O-rings in their compressed state.

3,690,705

HEAT INSULATING DEVICE FOR FASTENING TWO METALLIC MEMBERS OR OTHER OBJECTS TO EACH OTHER

Goran Ygfors, Sollentuna, Sweden, assignor to Ygfors Trading AB, Jarfalla, Sweden

Filed March 4, 1970, Ser. No. 16,547
Claims priority, application Sweden, March 7, 1969, 3147/69
Int. Cl. F16b *1/00*
U.S. Cl. 287—20.3 4 Claims



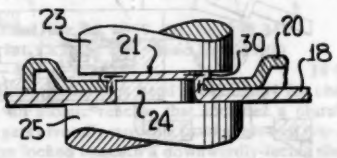
A device for rigidly connecting two metallic members together in heat-insulating condition. A non-metallic bushing with a central passageway is positioned within a hole provided in at least one of said members and a screw or like fastener is positioned through the passageway adjacent the hole to expand the bushing within the hole. In one embodiment, the screw is secured directly to the second member and in another embodiment the bushing is expanded within the holes in both members thereby effecting the rigid connection.

3,690,706

SINGLE OPERATION RIVET

Arnold R. Bolk, 12612 South Yale Avenue, Chicago, Ill., and Albert J. Holk, Jr., Rt. #1, Frankfort, Ill.

Division of Ser. No. 695,915, Jan. 5, 1968, Pat. No. 3,557,441.
This application Aug. 25, 1970, Ser. No. 66,667
Int. Cl. F16b *1/00*
U.S. Cl. 287—20.3 1 Claim



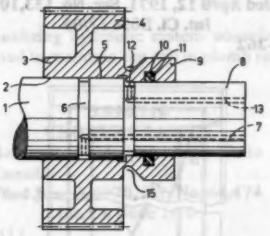
This disclosure has to do with a rivet which is formed of sheet material as an integral component thereof. The rivet differs from other rivets in that although it is of a tubular construction the body and closed end thereof have the material thereof compressively stressed. The rivet is formed in a single operation through the extrusion flow of the material of the sheet between a pair of punches and as a part of the operation, the rivet may also be headed. The rivet is readily formed utilizing a tool set consisting solely of two opposed male punches and has particular adaptability to the securement of pull tabs to easy opening container ends.

3,690,707

CONNECTION OF TWO MEMBERS SHRUNK ON EACH OTHER

Petrus Johannes Cornelius van Rooij, Emmasingel, Eindhoven, Netherlands

Filed Nov. 23, 1970, Ser. No. 91,966
Claims priority, application Netherlands, Dec. 10, 1969, 6918492
Int. Cl. F16d *1/06*
U.S. Cl. 287—52 R 4 Claims



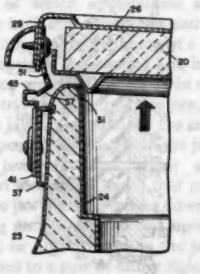
A shrink connection between two members in which at the area of the fitting surfaces, an annular groove is present which divides the fitting surfaces into two equal parts and communicates, via a liquid supply duct, with the atmosphere, the members on one side of the fitting surfaces comprising parts having diameters differing from the fitting surfaces, in such manner that said parts are not shrunk on each other, a flexible sealing element being present between said parts and a further liquid supply duct debouching between the relative side of the fitting surfaces and the sealing element.

3,690,708

PRESSURE-RELEASING LATCH ASSEMBLY FOR PICNIC COOLERS

Lauren D. Worley, and James R. Conley, both of Wichita, Kans., assignors to The Coleman Company, Inc., Wichita, Kans.

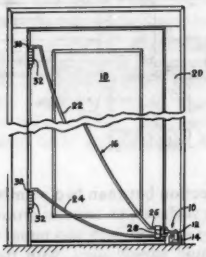
Filed May 12, 1971, Ser. No. 142,571
Int. Cl. E05c *3/04, 11/00, 15/00*
U.S. Cl. 292—101 11 Claims



A safety latch for picnic coolers is provided which permits the door of the cooler to be unlatched when pressure is applied to the door from inside the cooler. The latch assembly

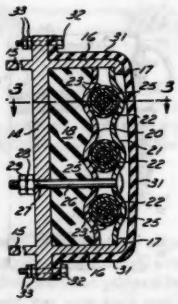
includes a latch rotatable between locking and unlocking positions which includes a keeper plate which is engagable with a strike for maintaining the door closed when the latch is in the locking position. The stroke is formed of flexible and resilient material and includes a shank portion extending generally parallel to the side wall on which the latch is mounted and a foot portion which extends generally laterally outwardly from the shank portion. The keeper plate extends laterally inwardly to engage the foot portion when the latch is in the locking position to prevent inadvertent opening of the door. When a predetermined force is applied to the interior of the door, the shank portion flexes inwardly to release the foot portion from the keeper plate to permit the door to swing open. When the door opens, the resilient shank portion returns to its unflexed position, and the foot portion is engagable with the keeper plate to prevent the door from closing until the latch is moved to the unlocking position.

3,690,709
DOOR GUARD
Frank J. Bogusz, Talcott, Farmington, Conn.
Filed April 12, 1971, Ser. No. 133,107
Int. Cl. E05c *17/06*
U.S. Cl. 292—262 **6 Claims**



There is provided a door guard which may be installed in relation to a swinging pivot action type door, and left thereon to selectively provide secure or unsecure mode for the doorway. Callers may be interviewed through partially opened door while retaining door guard in the secure mode thereby preventing entry to intruders. Convenient means is provided to disengage door guard from within the allow full opening of the door.

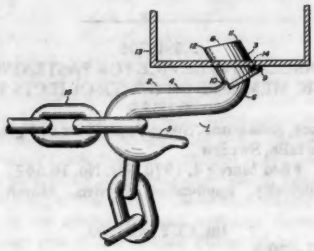
3,690,710
SHOCK ABSORBING BUMPER
Michael G. Curran, 11608 Detroit Avenue, Cleveland, Ohio
Filed May 12, 1971, Ser. No. 142,488
Int. Cl. B60r *19/08*
U.S. Cl. 293—71 R **15 Claims**



An improved shock absorbing bumper is provided for use on automobiles and the like in which, in one form, a backing plate supports an elastomeric body or pad having at its front a plurality of longitudinally extending elastomeric tubes. The tubes nest within corrugations of a corrugated panel which, upon being struck, compresses the tubes and elastomeric body during movement of the panel toward the back or support plate. Preferably, an elastomeric cover substantially encompasses the body, tubes, and corrugated panels and has terminal portions secured to the support plate. The tubes are preferably closed at their ends and may contain rubber pellets, liquids, compressed gas, and the like.

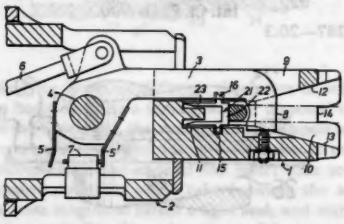
3,690,711
Patent Not Issued For This Number

3,690,712
GRAB HOOK ASSEMBLY
Wilbur N. Bahrman, 3031 Shakespeare Road, Bethlehem, Pa.
Filed March 15, 1971, Ser. No. 124,355
Int. Cl. B66c *1/34*
U.S. Cl. 294—82 R **3 Claims**



A grab hook assembly for use in the straightening of motor vehicle frames and the like. The hook is S-shaped and has a link-receiving grab hook at one end and a reverse open throat hook formed at the other end which is designed to fit in the welding jig holes provided in the structural members of a motor vehicle frame by the manufacturer. Included in the assembly is a removable collar member adapted to fit over the leading end of the reverse open throat hook to enlarge the bearing surface thereof when the hook is used in large diameter jig holes.

3,690,713
GRIPPING TOOL
Ulrich Ristow, Neu Isenburg, Germany, assignor to Licentia Patent-Verwaltungs G.m.b.H., Frankfurt am Main, Germany
Filed April 27, 1971, Ser. No. 137,756
Claims priority, application Germany, April 15, 1970, P 20 17 912.8; April 15, 1970, HGM 70 13 719.8
Int. Cl. B66c *1/62*
U.S. Cl. 294—86 A **7 Claims**



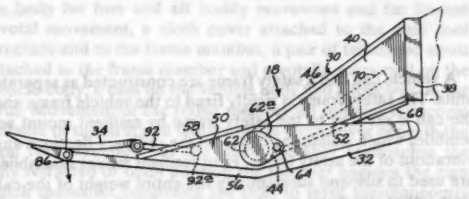
A gripper with a muzzle-shaped opening to receive loops on control rods and fuel elements of a nuclear reactor and guide

these loops to a slit where they can be gripped by a rotatable gripping hook. An inset having an end wall and spaced walls projecting in the same direction from the end wall is designed to be slipped into engagement within the slit. In a first position the spaced walls project in the slit toward the muzzle-shaped opening to restrict the slit to the reception of a relatively narrow loop on a control rod. In a second position the spaced walls are reversed in the slit so that the full width of the slit toward the muzzle-shaped opening is available to receive the relatively wide loop on a fuel element.

3,690,714
ROLL CLAMP

Stanley E. Farmer, Gresham, Oreg., assignor to Cascade Corporation, Portland, Oreg.

Continuation of Ser. No. 814,919, April 10, 1969, abandoned. This application Aug. 26, 1970, Ser. No. 67,235
Int. Cl. B66f 9/18
U.S. Cl. 294—88 **4 Claims**



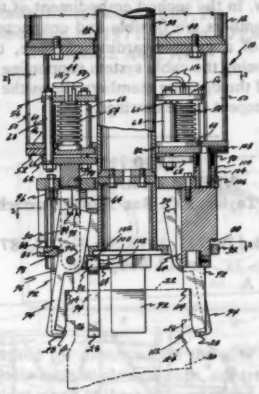
A roll clamp comprising a pair of concavely curved pads for clamping onto opposite sides of a roll. A pair of opposed arm structures extending rearwardly from the pads toward a frame support the pads in spaced opposed and facing relationship. The arm structures are movable toward and away from each other on the frame, whereby the pads may be brought against opposite sides of a roll. At least one arm structure includes an arm base which is mounted on the frame, a forward arm section, and means pivotally mounting the forward arm section on the arm base enabling it to swing in each of opposite directions until reaching defined limit positions. The pivot means is located toward said frame from said pads, and from the load center of any roll clamped by the pads. A spring biases the forward arm section to place it in an intermediate at rest position between these two limit positions.

3,690,715
TRAVELING CRANE HEAD SUBASSEMBLY FOR ATOMIC REACTOR FUEL CELLS

George A. Vanlingen, and Eugene W. Pickett, both of Denver, Colo., assignors to Stearns-Roger Corporation, Denver, Colo.

Filed Nov. 26, 1969, Ser. No. 880,344
Int. Cl. B25j 3/04; B66c 1/10, 19/00
U.S. Cl. 294—88 **10 Claims**

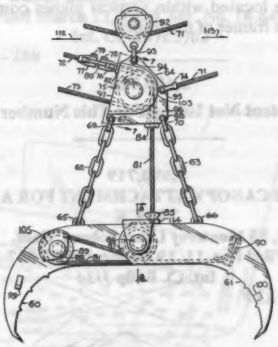
This invention relates to a head subassembly for changing fuel cells in an atomic reactor that includes a plurality of hook-like fingers pivotally movable from a released into an engaged position locked beneath a downwardly-facing shoulder around the top of the cell. These fingers are cammed between their released and engaged positions by a pneumatic-servomotor actuated cam plate. Each of the fingers is suspended from a separate sealed fluid chamber of variable volume and the several chambers are, in turn, serially interconnected to form a self-equalizing hydraulic system wherein the load is evenly distributed to maintain the cell in plumb relation.



3,690,716
CHOKER GRAPPLE

Norman A. Johnson, 5325 10th Ave., Delta 742, British Columbia, Canada

Filed June 8, 1970, Ser. No. 44,474
Int. Cl. B66c 1/10
U.S. Cl. 294—111 **3 Claims**



This disclosure pertains to that class of grapples shown as two-line grapples, wherein one line opens and one line closes the grapple. Two embodiments of the invention are disclosed in detail, the first for grapple-loading and the second for grapple-yarding, both of which applications are found in the logging industry. In both embodiments a pair of jaws are interconnected at their upper ends by means of a pivot pin for scissors-like relative motion. The closing line is entrained about the pivot pin, thence entrained about a pin mounted substantially at the geometric mid point of one jaw, and thence connected to the other jaw at substantially the same geometric location. Hence, supporting the weight of the jaws by the closing line causes the jaws to close about a log or object therebetween; in so closing the jaws, that part of the closing line which spans the jaw opening moves downward, thus choking off the opening and coming to rest upon and tending to bite into the log(s) or object between the jaws. The opening line is interconnected to a pair of either rigid or flexible opening members, one each of which is connected to a point midway between the upper and lower ends of each jaw. Hence, supporting the jaws by the opening line causes the jaws to fall open under the influence of gravity, much as in the case of a

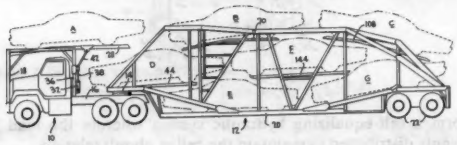
clamshell bucket. In the first embodiment of the invention, the opening members are rigid and pivotally interconnected at their upper ends and pivotally connected at their lower ends each to one jaw. In the second embodiment of the invention, the opening members are flexible and connected directly to the underside of a grapple-yarding carriage, the "opening line" in effect being the cable system supporting the carriage; the flexibility of the opening members allows the grapple-jaws to swivel with respect to the carriage.

3,690,717

VEHICLE TRANSPORT

Glenn Edward Taylor, P.O. Box 93006 Martech Station, Atlanta, Ga.

Filed Dec. 11, 1970, Ser. No. 97,187
Int. Cl. B60p *3/08*
U.S. Cl. 296—1 A **6 Claims**



A vehicle transport including a low-bed trailer in which the spaced side frames of the superstructure, except for the connection between their bottom edges, are interconnected solely by vertically adjustable horizontal cross-ties on which the forward ends of track assemblies are swingably supported for vertical adjustment, the rear ends of the respective track assemblies being vertically adjustable independently of their forward ends. All of the supporting and adjusting means for such assemblies are located within vertical planes common to the respective side frames of the trailer.

3,690,718

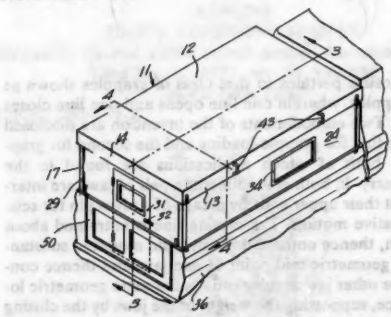
Patent Not Issued For This Number

3,690,719

FOLDABLE CANOPY ATTACHMENT FOR A PICK-UP TRUCK

Orin A. Yount, 85 Monterey Lane, Folsom, Calif.

Filed Dec. 11, 1970, Ser. No. 97,067
Int. Cl. B60p *3/34*
U.S. Cl. 296—23 F **7 Claims**



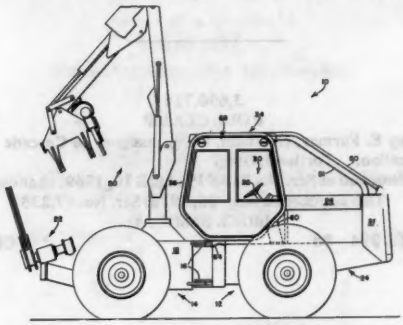
A canopy attachment for a pick-up truck consisting of a rectangular top wall having hinged side and end walls which are swingable beneath the top wall to form a flat package when the attachment is not in use. The side and end walls are swingable to vertical positions to define a camper enclosure and are provided with fastening latches engageable with cooperating elements on the top edges and rear end portions of the body of the pick-up truck to lock the attachment in operating position.

3,690,720

VEHICLE CAB AND SAFETY FRAME ASSEMBLY

Edwin Lee Whisler, Dubuque, Iowa, assignor to Deere & Company, Maline, Ill.

Filed July 27, 1970, Ser. No. 58,258
Int. Cl. B62d *27/04*
U.S. Cl. 296—28 C **2 Claims**



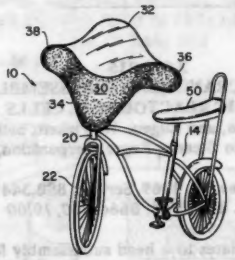
A vehicle cab and a safety frame are constructed as separate units. The safety frame is rigidly fixed to the vehicle frame and the cab is secured to the safety frame by resilient mount assemblies which isolate the cab from the ordinary flections and vibrations of the safety frame. Four resilient mount assemblies are used to suspend substantially the entire weight of the cab from upper structural members of the safety frame and a pair of resilient mounts are used to anchor the cab to lower structural members of the safety frame. The upper and lower resilient mount assemblies cooperate to limit lateral and fore-and-aft movements of the cab.

3,690,721

PROTECTIVE WINDSHIELD

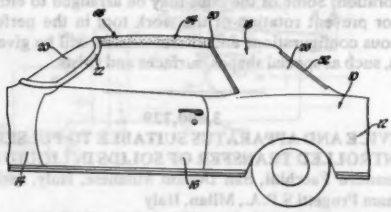
Donald C. Herbert, 23425 Colonial Court, St. Clair Shores, Mich.

Filed Nov. 12, 1970, Ser. No. 88,619
Int. Cl. B62h *17/04*
U.S. Cl. 296—78.1 **8 Claims**



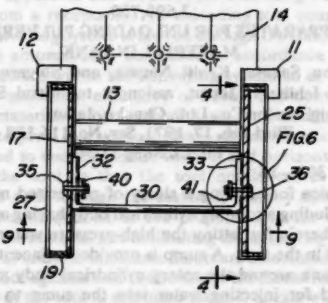
A protective windshield for a bicycle or the like, having clamps for removably mounting it on the handle bar. The upper portion of the shield is transparent and the lower portion is reflectorized and/or luminescent.

3,690,722
RETRACTABLE CLOSURE
Frank J. Bakewicz, Grosse Pointe, and Robert G. McGarvey, Troy, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed April 21, 1971, Ser. No. 135,855
Int. Cl. B60j 7/00
U.S. Cl. 296—137 R 4 Claims



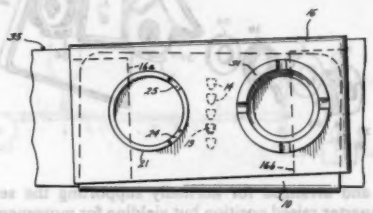
A retractable closure for a vehicle body having a rigid roof structure over only a portion of the passenger compartment, the closure including a frame member supported on the vehicle body for fore and aft bodily movement and for limited pivotal movement, a cloth cover attached to the rigid roof structure and to the frame member, a pair of telescopic struts attached to the frame member and pivotally supported on the vehicle body, a cam on the vehicle body and a follower on the strut. Movement of the frame member aft initiates telescopic collapse of the strut and folding of the cloth cover beneath the rigid roof structure. As the frame member approaches the fully retracted or open position the follower engages the cam which thereafter constrains the strut to pivot simultaneously with aft movement of the frame member, the strut, in turn, pivoting the frame member upward into juxtaposition with the underside of the rigid roof structure to maximize passenger headroom.

3,690,723
RECLINING CHAIR CONSTRUCTION
Douglas McClain, Houlka, Miss., and Lemuel E. Osborn, Wheaton, Ill., assignors to Relax-O-Lounger, Inc., Baldwyn, Miss.
Filed Oct. 8, 1970, Ser. No. 79,241
Int. Cl. A47c 1/02
U.S. Cl. 297—85 7 Claims



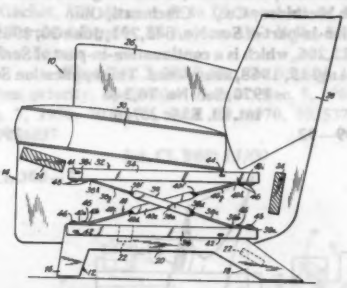
A reclining chair construction employs a basic frame comprising a pair of arm panels connected together by metal cross frames bolted to the panels.

3,690,724
CHAIR ARM SUPPORT
Ormond S. Douglas, 501 Ross, Dayton, Tex., and Warnell M. Byrd, 121 Anita Drive, Panama City, Fla.
Filed Sept. 13, 1971, Ser. No. 179,648
Int. Cl. A47c 7/62
U.S. Cl. 297—194 7 Claims



Support adapted for mounting on the arm of a chair, for support of objects such as glasses, cups, ash trays, or the like, within convenient reach of the occupant of the chair. The support has two flat panels, one flushly against the other, which rest upon the chair arm, and each has a downturned outer edge which grips a side of the chair arm. The relative positions of the panels are adjustable so that the support may be mounted on chair arms of diverse widths and on chair arms having sides angular one to the other.

3,690,725
ROCKING MOUNT FOR CHAIRS
William G. Faulkner, Jupiter, Fla., assignor to Peter S. Fletcher, Delray Beach, Fla.
Filed March 11, 1970, Ser. No. 18,647
Int. Cl. A47c 3/02
U.S. Cl. 297—258 22 Claims

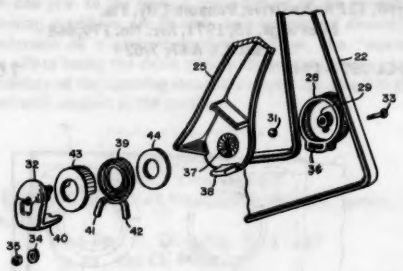


A rocking device for furniture, specifically for chairs. At each side of the chair a pair of members are arranged in a relatively flat crossed configuration and are rigidly fixed at their upper ends to a chair frame and at their lower ends to a stationary chair base. Each member is stiffened in its central region and flexible in its end regions, the ends of the member providing both a pivotal action and a spring action to produce a frictionless rocking motion of the chair frame on the chair base with positive and predictable path control and without any moving surfaces in frictional contact.

3,690,726
THREE-QUARTER FOLD CHAIR
Arthur L. Van Ryn, Grand Rapids, Mich., assignor to American Seating Company, Grand Rapids, Mich.
Filed Dec. 21, 1970, Ser. No. 100,208
Int. Cl. A47c 1/12
U.S. Cl. 297—332 5 Claims

A stadium chair has a base pivotally supporting a seat on a ball bearing with a spring actuator depending from the seat

lying between coil spring ends, the ends normally being spaced by a fixed arm depending from a tail back housing for the



spring and arranged for normally supporting the seat in a three-quarter raised position but yielding for movement of the seat to fully raised or lowered positions.

3,690,727

DUST SUPPRESSING DURING MINING PROCESS

Edward R. Degginger, Convent Station, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Oct. 13, 1970, Ser. No. 80,483
Int. Cl. E21c *41/00*
U.S. Cl. 299—12 9 Claims

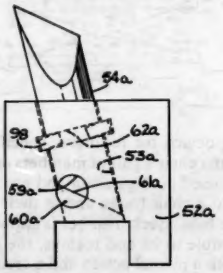
Dilatant compositions comprising aqueous solutions containing 0.5 to 6.0 weight percent alkali metal borate and 0.5 to 6.0 weight percent water soluble polyvinyl alcohol are effective dust suppressants and collectors.

3,690,728

RESILIENT RETAINING MEANS FOR JOINING WORK TOOLS AND WORK TOOL HOLDERS

Claude B. Krekeler, Cincinnati, Ohio, assignor to The Cincinnati Mine Machinery Co., Cincinnati, Ohio

Continuation-in-part of Ser. No. 842,791, June 30, 1969, Pat. No. 3,622,206, which is a continuation-in-part of Ser. No. 753,398, Aug. 19, 1968, abandoned. This application Sept. 8, 1970, Ser. No. 70,340
Int. Cl. E21c *25/46*
U.S. Cl. 299—92 29 Claims



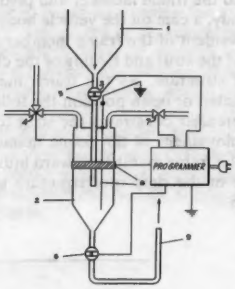
Resilient retaining means for securing work tools either rotatable or non-rotatable, in appropriate work tools holders or mounting means. The work tools and holders are intended primarily for use on mining, excavating and earth working machines and the like. The work tools comprise elongated elements having a shank portion with a working tip at one end and a gauge-determining abutment surface at at least the other end. The holders or mounting means comprise bodies having a shank receiving perforation and means in association with the bottom of the perforation having an abutment surface adapted to cooperate with the abutment surface on the work tool. Either the work tool or the holder, and in a few cases, both, is provided with a recess to receive a resilient retaining means, usually, in the present invention, a special form of spring clip, to frictionally retain the work tool in the holder against longitudinal movement. In some cases the spring clip will be captive in the holder and will frictionally engage the work tool shank portion in such manner that the work tool will be non-rotatable in the shank receiving portion of the holder. In other cases the spring clip will also be captive in the holder and will also frictionally engage the shank but both the shank and retainer will rotate together with respect to the perforation. And in still other cases the spring clip will be captive on the shank, in a particular manner, and will frictionally engage the lug, the work tool usually being rotatable within the clip and perforation. Some of the clips may be arranged to either permit or prevent rotation of the work tool in the perforation. Various configurations and characteristics will be given these clips, such as special shapes, surfaces and twists.

3,690,729

DEVICE AND APPARATUS SUITABLE TO PULSED AND CONTROLLED TRANSFER OF SOLIDS IN LIQUID PHASE

Alessandro Facchini, San Donato Milanese, Italy, assignor to Snam Progetti S.P.A., Milan, Italy

Filed May 13, 1970, Ser. No. 36,765
Claims priority, application Italy, May 13, 1969, 16751 A/69
Int. Cl. B65g *53/04*
U.S. Cl. 302—15 3 Claims



Finely divided particles of a brittle solid are transported by dispersing them in a transport liquid of lower density in a dispersion chamber and by feeding a series of aliquots of the dispersion from the dispersion chamber to a vessel, equipped with inlet and outlet ducts which are respectively provided with automatic control valves, when the several aliquots are subjected to increased pressure and whence the dispersed particles are expelled for transport through the outlet duct.

3,690,730

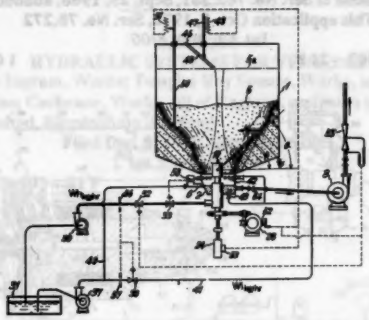
APPARATUS FOR UNLOADING PULVERIZED MATERIAL IN TANK

Masanobu Sakata, Keniti Nagata, and Shigeru Nagamori, all of Ichihara, Japan, assignors to Mitsui Shipbuilding and Engineering Co., Ltd., Chuoku, Japan

Filed Feb. 17, 1971, Ser. No. 116,128
Int. Cl. B65g *53/30*
U.S. Cl. 302—15 4 Claims

A device for creating a slurry of pulverized material in a tank including a rotating cylindrical body having an adjustable nozzle therein for jetting the high-pressure water against the material in the tank. A sump is provided adjacent the bottom of the tank around the rotary cylindrical body and means is provided for injecting water into the sump to control the fluidity of the pulverized material falling into the sump. Detection rods are provided to detect the total amount of material in the tank and to detect the amount of pulverized material which is compacted against the sides of the tank. Controls are

provided to regulate the flow and orientation of flow of water through the two nozzles and the orientation of the rotating



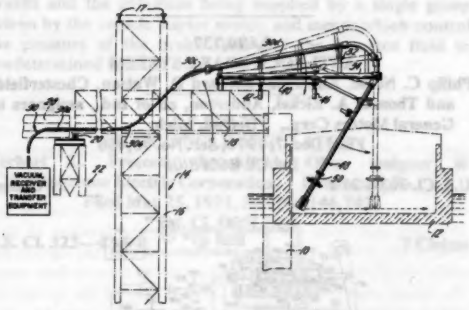
nozzle to break down the caking of the pulverized material and to effect efficient discharge of the slurry of material from the tank.

3,690,731

APPARATUS AND METHODS FOR UNLOADING BULK FLUENT MATERIALS

Lauritz E. Mylting, Ardmore, Pa., assignor to Envirotech Corporation, Salt Lake City, Utah, a part interest

Filed Aug. 17, 1970, Ser. No. 64,329
Int. Cl. B65g *53/40*
U.S. Cl. 302—42 29 Claims



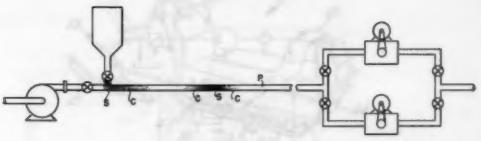
Vacuum apparatus and methods for unloading bulk fluent material from a receptacle. An unloading tool coupled to a vacuum conveying system is moved through the fluent material at a rate automatically controlled in accordance with the vacuum pressure within the conveying system so as to afford continuous maximum efficiency of intake and conveying of the fluent material. In one embodiment, the unloading tool is supported to pivot in a vertical plane, and automatic controls are provided to coordinate the vertical and horizontal movements of the tool so that the tool nozzle moves along a straight-line path through the material, thereby allowing the nozzle to be maintained at the proper depth for optimum delivery of the material and facilitating the unloading of layers of material of uniform thickness. Structure associated with the unloading tool agitates and redistributes the fluent material in the vicinity of the tool to surround the tool nozzle with a continuous supply of free-flowing material. A safety device breaks the vacuum in the conveying system at a predetermined pressure level, thus avoiding stalling of, or damage to, the system from too high vacuums.

3,690,732

CAP FORMATION IN SLURRY PIPELINES

Edward J. Wasp, San Rafael, Calif., assignor to Bechtel International Corporation

Filed Feb. 18, 1971, Ser. No. 116,678
Int. Cl. B65g *53/30*
U.S. Cl. 302—66 7 Claims



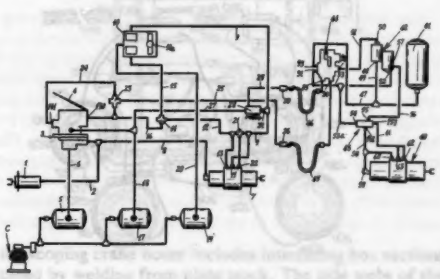
My prior U.S. Pat. No. 2,920,923 of Jan. 12, 1960 teaches the desirability of including a quantity of a "pseudo-fluid" between a slug of water and a slug of slurry in a pipeline used for the transportation of the slurry. The pseudo fluid is also known as a "cap." The utility of the pseudo fluid or cap is to exert a suspending influence on the relatively coarse particles of the solids in the slurry which is substantially greater than the suspending force exerted by the liquid alone. Preparation of the pseudo fluid or cap is carried on as a separate operation and one must be present between each slug of water and slurry. In accordance with this invention, the pseudo fluid or cap is created from the slurry itself and in a very simple manner, thus facilitating the pumping of the slurry and decreasing the overall cost of operation.

3,690,733

COMPRESSED-AIR BRAKING AND LOCKING SYSTEM FOR TRAILERS OR SEMITRAILERS

Jean Gachot, 179 Avenue de la Divison Leclere, 95 Enghien, and Fernand Perales, 87 Avenue A.G. Belin, 95 Argenteuil, both of France

Filed Dec. 7, 1970, Ser. No. 95,684
Claims priority, application France, Dec. 9, 1969, 6942493; Aug. 7, 1970, 7029170; Sept. 30, 1970, 7035370; Oct. 13, 1970, 7036857
Int. Cl. B60t *13/00*
U.S. Cl. 303—7 19 Claims



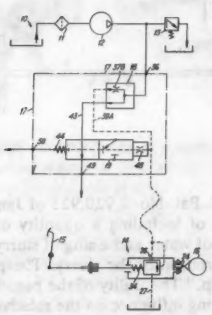
A compressed-air braking and brakes locking system for trailers is provided, which permits to release the trailer brakes and to apply and lock the trailer brakes again when the trailer is separated from its tractor. The system includes a compressed air reservoir and an emergency relay valve on the trailer and a hand operated valve so arranged to put the control inlets of the emergency relay valve and of the brake unlocking device selectively in communication with the control circuits of the tractor or with the reservoir of the trailer.

3,690,734

TRACTOR CONTROLLED TRAILER BRAKE

Jean Claude Van Dest, Ris-Orangis, France, assignor to Massey-Ferguson Services N.V., Curacao, Netherlands

Filed Dec. 8, 1970, Ser. No. 96,194
Claims priority, application Great Britain, Dec. 18, 1969, 61,822/69
Int. Cl. B60t 13/00
U.S. Cl. 303—7 10 Claims



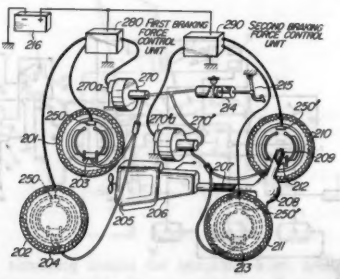
A tractor hydraulic braking system includes hydraulic connections from a tractor auxiliary hydraulic power source to the trailer brakes. A control valve is responsive to tractor brake application forces to control hydraulic power fluid flow to the trailer brakes in proportion to tractor brake forces.

3,690,735

ANTI-SKID DEVICE FOR VEHICLES

Hiroshi Arai; Akira Nakamura, both of Toyota; Atutosi Okamoto, Toyohashi; Shunji Okumura; Motoyoshi Suzuki, both of Kariya, and Akio Sugiura, Nagoya, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyotashi and Nippondenso Kabushiki Kaisha, Aichi-ken, Japan, part interest to each

Filed Dec. 3, 1970, Ser. No. 94,740
Int. Cl. B60t 8/08
U.S. Cl. 303—21 P 5 Claims



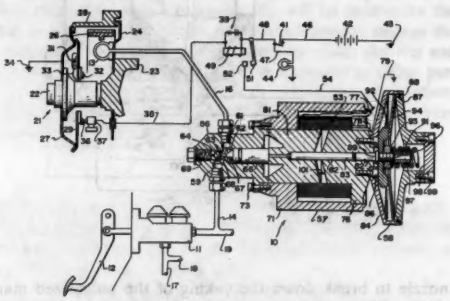
An anti-skid device for vehicles comprising a wheel speed detector for producing an output signal upon detecting that the wheel speed is below a predetermined value, a first timer circuit for producing an output signal when the output signal from the wheel speed detector remains on for more than a definite time, and a second timer circuit for energizing the braking force modulator only for a definite time upon receipt of the output signal from the first timer circuit, whereby the locking of wheels due to a braking operation by the driver may be prevented.

3,690,736

FLUID PRESSURE MODULATING APPARATUS

Richard L. Smirl, 314 N. Edgewood, La Grange Park, Ill., and Richard D. Kerestury, 617 N. Garfield St., Lombard, Ill.

Continuation of Ser. No. 762,381, Sept. 25, 1968, abandoned.
This application Oct. 5, 1970, Ser. No. 78,272
Int. Cl. B60t 8/00
U.S. Cl. 303—21 F 1 Claim



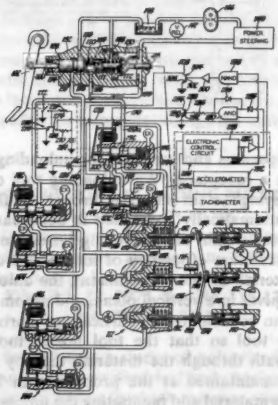
Fluid pressure regulating apparatus for incorporation in a hydraulic braking system of a vehicle, includes an electrically actuated spring driven reciprocable plunger device providing periodic increase and decrease of the available volume in the system for varying the braking pressure and therefore the braking force exerted by the system. Plunger movement is controlled by the combination of fluid pressure in the system, a spring having a negative deflection rate, and an armature moveable in accordance with a magnetic flux field. The spring and armature cooperate in providing rapid movement of the plunger in a direction to quickly reduce braking pressure for avoiding skidding.

3,690,737

ANTI-LOCK BRAKE SYSTEM

Philip C. Neese, Anderson; Richard D. Watson, Chesterfield, and Thomas A. Zickel, Anderson, all of Ind., assignors to General Motors Corp., Detroit, Mich.

Filed Dec. 7, 1970, Ser. No. 95,468
Int. Cl. B60t 8/06
U.S. Cl. 303—21 F 7 Claims



An anti-lock brake system includes separate hydraulically boosted master cylinders for each wheel brake or set of wheel brakes to be controlled, a brake control valve to provide fluid pressure for simultaneous actuation of the plurality of hydraulic boosters, an anti-lock control valve circuit associated with

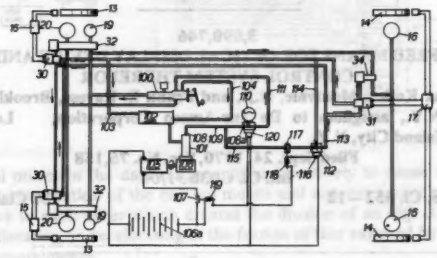
each hydraulic booster to control the brakes individually by releasing and reapplying the hydraulic pressure to the hydraulic boosters, and auxiliary actuating means for brake actuation subsequent to a loss of hydraulic pressure.

3,690,738

HYDRAULIC SYSTEMS FOR VEHICLES

Brian Ingram, Warks; Douglas Roy Spence, Warks, and Robin Adam Cochrane, Warks, all of England, assignors to Girling Limited, Birmingham, England

Filed Dec. 8, 1970, Ser. No. 96,085
Int. Cl. B60t 8/06
U.S. Cl. 303—21 F 8 Claims



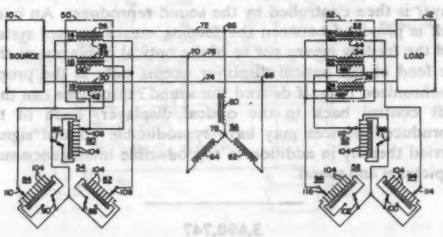
An anti-skid braking system includes hydraulically actuated valves which interrupt the supply of fluid to the brakes when deceleration is excessive, the pressure fluid for both the brakes and the actuators being supplied by a single pump driven by the vehicle starter motor, and means which control the pressure of the brake fluid and the actuator fluid to predetermined values.

3,690,739

PHASE-ANGLE REGULATOR

Herbert L. Prescott, Brookfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 25, 1971, Ser. No. 146,742
Int. Cl. G05f 3/04
U.S. Cl. 323—43.5 R 7 Claims



Load tap changing regulator apparatus for high voltage power distribution systems. Two series transformers are used with separate excitation windings and tap changing means. The tap changers may be synchronized to provide phase-angle regulation with or without a change in the voltage.

3,690,740

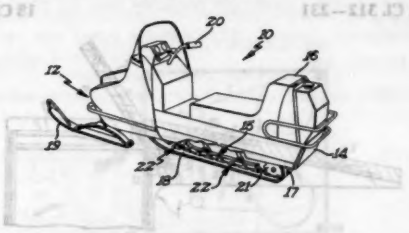
Patent Not Issued For This Number

3,690,741

EYELET FOR TRACK DRIVEN VEHICLE

Neil W. Pierson, P. O. Box 98, Roseau, Minn.

Filed March 29, 1971, Ser. No. 128,814
Int. Cl. B62d 55/24
U.S. Cl. 305—38 10 Claims



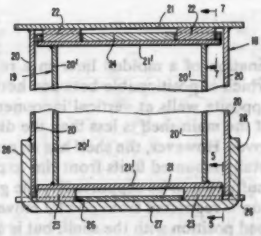
An improved eyelet for track driven vehicles allowing the track to be driven by the teeth of a drive sprocket extending through the eyelet is disclosed. The eyelet includes a head for mounting inside of the track and a hollow body extending from the head through an aperture in the track to fold over the track on the outside and hold the eyelet in the track. The eyelet head includes a set of parallel sides providing sliding support and a set of parallel sides providing guiding support for a slide rail suspension of the track driven vehicle. Further the head is curled back towards the track itself to grip the track. Also disclosed is a washer which may be used with the eyelet of the present invention also to grip the track. The washer may also include traction teeth extending downward from the outside of the track.

3,690,742

CRANE BOOM

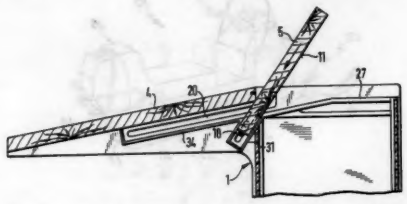
Fu-Tien Sung, Waynesboro, Pa., assignor to Grove Manufacturing Company, Shady Grove, Pa.

Continuation of Ser. No. 90,373, Nov. 17, 1970, abandoned.
This application Nov. 19, 1971, Ser. No. 200,352
Int. Cl. F16c 17/00
U.S. Cl. 308—3 R 9 Claims



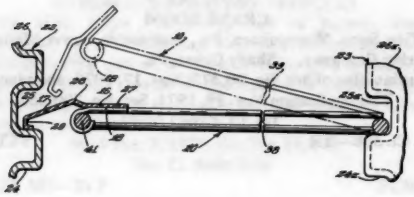
A telescoping crane boom includes interfitting box sections fabricated by welding from plate stock. The side webs of the individual box sections are spaced inwardly from the longitudinal edges of the top and bottom webs, to allow placement of bearing pads substantially directly over and under the side webs of each box section in a multiple section boom. As a result, the side webs of the box sections are utilized as columns to absorb the heavy stresses transmitted through the wear pads and transverse stressing and flexure of the top and bottom webs is greatly minimized. The arrangement allows considerably lighter sections to be employed for the top and bottom webs of the individual box sections without fear of excessive transverse bending.

3,690,743
SCHOOL DESKS
Fritz Flototto, Uber Bielefeld II, Friedrichsdorf near Bielefeld, Germany
Filed Sept. 14, 1970, Ser. No. 71,654
Claims priority, application Germany, Sept. 15, 1969, P 19 46 659.2
Int. Cl. A47c 1/00
U.S. Cl. 312—231 18 Claims



A school desk comprises a front compartment which opens in an upward direction. For closing the compartment use is made of a folding flap which, for opening the compartment, can be slid quietly underneath the top of the desk.

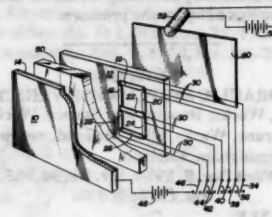
3,690,744
ADJUSTABLE REFRIGERATOR SHELF
Herbert D. Squire, 535 Columbus, Galesburg, Ill.
Filed Feb. 5, 1970, Ser. No. 8,949
Int. Cl. A47b 96/02; A47f 5/00
U.S. Cl. 312—351 4 Claims



The combination of a molded liner in a refrigerating unit and a shelf which is positionable between horizontal grooves formed on opposite walls at vertical increments in the liner. The length of the main shelf is less than the distance between opposite grooves. However, the shelf has an extension portion which is pivotally mounted to its front rim to cause its overall length to be sufficient to be supported by the grooves. The extension portion is restricted from pivotal movement upwardly from its aligned position with the shelf, but is allowed to pivot downwardly so as to allow the shelf to be moved either upwardly or downwardly to a new position in the refrigerator.

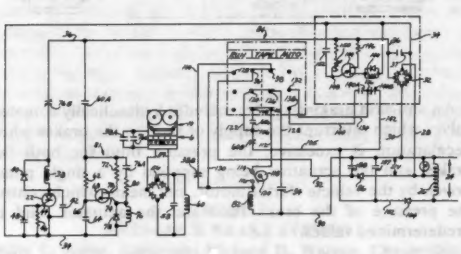
3,690,745
ELECTRO-OPTICAL DEVICES USING LYOTROPIC NEMATIC LIQUID CRYSTALS
Derick Jones, Lu, Sun, Dallas, Tex., assignor to Taxas Instuments Incorporated, Dallas, Tex.
Filed March 3, 1970, Ser. No. 16,078
Int. Cl. G02f 1/28; G01n 31/00
U.S. Cl. 350—160 R 12 Claims

A display device in which a thin layer of a lyotropic nematic mesomorphic composition is utilized to diffuse light from a source toward an observer by applying a suitable voltage, for example, 20 volts for a 1 mil layer. One form of the device transmits light through the layer. A second form of the device uses light diffused and reflected to the observer. A preferred



lyotropic nematic mesomorphic composition includes three compounds of the structural formulas

3,690,746
FEED MEANS FOR OPTICAL DISPLAY DEVICE AND CONTROL SYSTEM THEREFOR
Max Kotler, Montvale, N.J., and Frank E. Ravese, Brooklyn, N.Y., assignors to De Jur-Amsco Corporation, Long Island City, N.Y.
Filed Sept. 24, 1970, Ser. No. 75,158
Int. Cl. G03b 31/00
U.S. Cl. 352—12 37 Claims

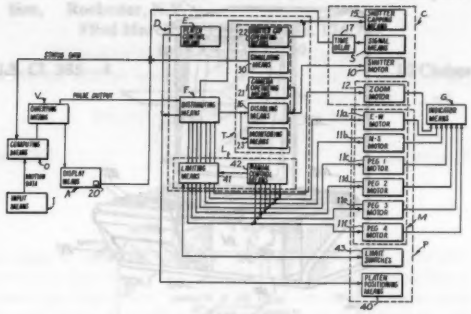


An optical displayer such as a motion picture or slide projector is used in conjunction with a sound reproducer, each reproducing from a film, tape, or other device. The controls for the feeding of the respective devices through the optical displayer and the sound reproducer are interrelated so that first one and then the other controls the feeding of itself and/or the other. In a preferred embodiment, the optical displayer feeds for a predetermined period of time, it then causes the sound reproducer to feed, and the feed of the optical displayer is then controlled by the sound reproducer. An interlock is provided between the feeding means control system and the feeding means per se of the optical displayer, so that the feed of the optical displayer occurs only at the proper synchronized time. If desired the sound reproducer can then shift control back to the optical displayer. Each of the reproduced devices may have reproducible control signals carried thereby in addition to reproducible intelligence such as pictures and sound.

3,690,747
ANIMATION SYSTEM
Charles A. Vaughn, 2665 Regency Drive, E. Tucker, Ga.
Filed Oct. 26, 1970, Ser. No. 83,900
Int. Cl. G03b 21/32
U.S. Cl. 352—87 23 Claims

An animation system in which a camera means for exposing frames of film to photograph an object and a support means for supporting the object with respect to the camera means are moved relative to each other in accordance with motion data and status data converted by a computing means into a plurality of data outputs to which a motion means for moving the

camera means and the support means relative to each other is responsive, each of the plurality of data outputs including a number of electrical pulses indicative of the motion data and occurring in response to status data. The motion data is converted by the computing means so that the numbers of electrical pulses in the data outputs differ selectively to cause that varying motion of the camera means and support means relative to each other which creates the illusion of an object accelerating or decelerating in the frames of film exposed by the camera means.



3,690,748

MOTION PICTURE CAMERA WITH A FADE-OVER DEVICE

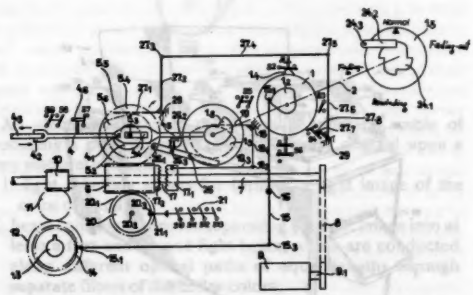
Johann Roth, Schwabhausen, Germany, assignor to Niezoldi & Kramer GmbH, Munich-Allach, Germany

Filed June 30, 1970, Ser. No. 51,074

Claims priority, application Germany, July 2, 1969, P 19 33 579.6

Int. Cl. G03b 21/36

U.S. Cl. 352—91 **9 Claims**



A motion picture camera having diaphragm, a winding spool, a device for measuring off the same length of film for a fading-out film section and a subsequent fading-over film section, and motor means for driving the camera, which comprises a fade-over device having a selector disc adapted to be moved into a plurality of fade-over phases, the fade-over device, depending on the position of the selector disc being adapted to initiate, carry out, and complete all electric and mechanical functions necessary for the respective preselected fade-over phase.

3,690,749

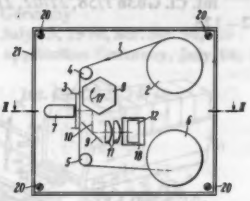
FILM PROJECTOR

Ottmar Haberkern, Wiesbaden, and Gunter Heller, Wiesbaden-Biebrich, both of Germany, assignors to Ottmar Haberkern, Wiesbaden, Germany

Filed Sept. 21, 1970, Ser. No. 73,742

Int. Cl. G03b 41/06

U.S. Cl. 352—108 **7 Claims**



A film projector, preferably for projecting films in cartridges, having a projection lamp separated from the film gate by a heat insulated separation wall within the projector housing. The light is directed through a light guide rod onto the film frame to be projected. The film runs continuously, and the optical standstill of the picture is performed by a prismatic mirror. The prismatic mirror is rotated by a drive which is engaged to the film perforations.

3,690,750

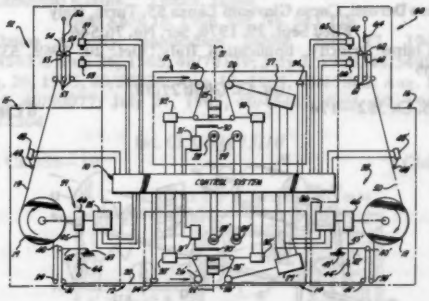
CONTROL SYSTEM

John Kellner Taillon, Massena, N.Y., assignor to Bell & Howell Company, Pasadena, Calif.

Division of Ser. No. 795,992, Feb. 3, 1969, Pat. No. 3,552,842. This application Nov. 12, 1970, Ser. No. 88,633

Int. Cl. G03b 23/02

U.S. Cl. 352—124 **5 Claims**



A control system for a motion picture projection installation having a pair of lengths of motion picture film passed along separate film paths through separate reversible drive means between a pair of reels upon which the films are cowound in reciprocal head-to-tail bifilar relation. The control system includes means for sensing the quantity of film present in one of the film paths between one reel and film display means located intermediate the reels. The control system also includes means for controlling the drive means to maintain said film quantity between predetermined limits.

3,690,751

PROJECTOR FOR USE WITH CASSETTES FOR MOTION PICTURE FILM

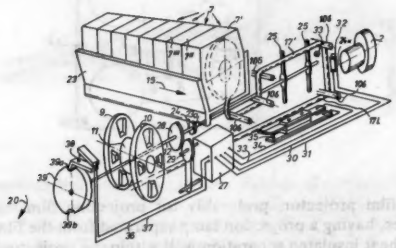
Bernhard von Fischern; Alfred Winkler; Klaus Fuchsle, all of Munich; Johann Zanner, Jr., and Peter Ungnadner, both of Unterhaching, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 18, 1970, Ser. No. 99,569

Claims priority, application Germany, Dec. 23, 1969, P 19 64 727.9

Int. Cl. G03b *1/58, 21/02, 21/52*

U.S. Cl. 352—125 26 Claims



A motion picture projector for use with magazines containing stacks of cassettes for motion picture film. The housing of the projector supports two coaxial takeup reels one of which assumes a collecting position and collects the film which is being withdrawn from a cassette in a projection position while the other takeup reel assumes a withdrawing position and pays out the film whose presentation is completed and which is being returned to the corresponding cassette. The takeup reels are caused to change positions in response to detection of the trailing portion of the film which is being presented, and such change in positions of the takeup reels take place simultaneously with a stepwise advance of the magazine so as to place a fresh cassette into the projection position while the preceding cassette assumes a position in which a rewinding mechanism rewinds onto its supply reel that film which is stored on the core of the takeup reel occupying the withdrawing position.

3,690,752

DEVICE FOR STANDING PROJECTION OF SINGLE PHOTOGRAMS IN A CINEMATOGRAPHIC PROJECTOR

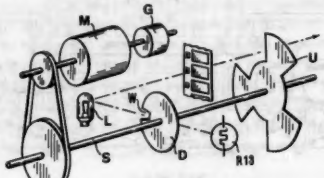
Piero Derossi, Corso Giovanni Lanza 55, Turin, Italy

Filed Sept. 29, 1970, Ser. No. 76,546

Claims priority, application Italy, Oct. 20, 1969, 53749-A/69

Int. Cl. G03b *21/38*

U.S. Cl. 352—174 6 Claims



In a cinematographic projector having an electronic circuit for speed control, a device is provided for interrupting motor supply when standing projection is required. The device comprises an apertured disc rotating with the sector diaphragm of the projector and interposed between a lamp and a photoresistance connected with the electronic speed control circuit for stopping conduction of the circuit when the photoresistance is illuminated. The aperture of the disc is arranged for allowing illumination of the photoresistance when the sector diaphragm leaves a projected photogram entirely free.

3,690,753

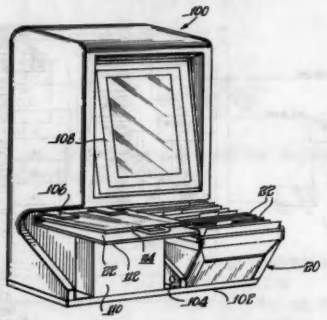
DATA STORAGE SYSTEM

Ernest A. Dahl, Jr., 729 Greenwood Ave., Wilmette, Ill.

Filed Jan. 2, 1970, Ser. No. 57

Int. Cl. G03b *1/48, 23/02*

U.S. Cl. 353—23 4 Claims



An apertured frame including side and bottom tab sections for holding a microfilm data sheet for filing with others and for use individually in combination with a microfilm reader having a transparent base to support the frame and a transparent upper flat to fit the frame aperture and hold the microfilm data in position for viewing.

ERRATUM

For Class 353—103 see:
Patent No. 3,690,186

3,690,754

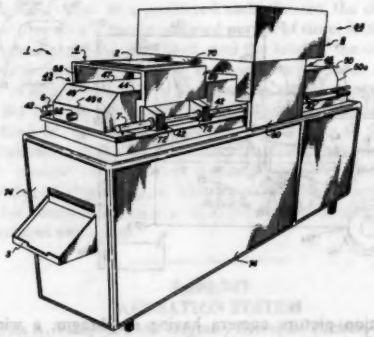
CONTROL SYSTEM FOR AN OPTICAL IMAGING SYSTEM

Edwin A. Urbanek, Penfield, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Nov. 14, 1969, Ser. No. 876,977

Int. Cl. G03g *15/00*; B01k *5/00*

U.S. Cl. 355—3 2 Claims



An electrical control system is used to regulate the operation of a photoelectrophoretic imaging machine. Included is a lead peaked ballast circuit for driving metallic additive gas discharge lamps. Lamp output is controlled by coupling capacitors in series with a lamp and by varying the input current to the primary of a step-up transformer coupled to a lamp. A controller meter is used to automatically maintain the transformer primary current within desired limits.

3,690,755

Patent Not Issued For This Number

3,690,756

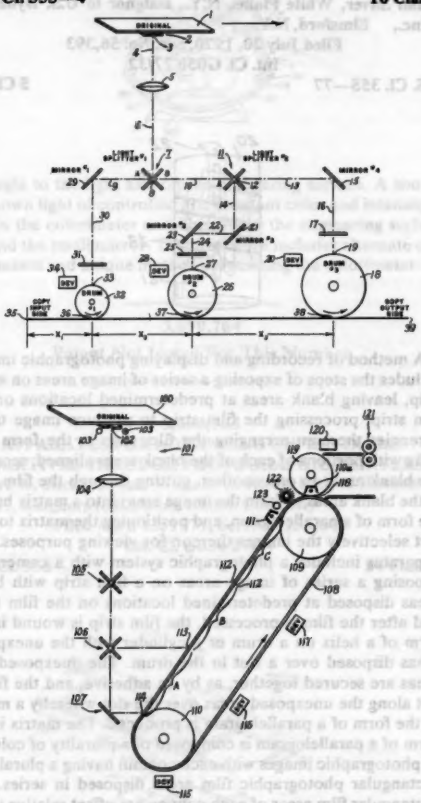
COLOR XEROGRAPHY

William A. Smith, Webster, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed March 22, 1971, Ser. No. 126,742

Int. Cl. G03g *15/00*

U.S. Cl. 355—4 **10 Claims**



An electrostatographic reproduction apparatus cable of producing a polychromatic copy of a color original upon a copy material comprising:

1. light scanning means for forming a light image of the color original;
2. beam splitting means for separating the light image into at least a first and second light beam, which are conducted along different optical paths of equal lengths through separate filters of dissimilar colors;
3. a uniformly charged photoconductive area at the terminus of each optical path, each area being simultaneously discharged in imagewise configuration by the light beam impinging upon it;
4. means for separately developing the respective imaged areas with toner compositions of different colors to form developed images of different colors; and
5. means for moving a copy material in sequential contact with the developed photoconductive areas whereby the developed images are transferred thereto in substantially perfect registration to thereby form a composite color image.

3,690,757

Patent Not Issued For This Number

3,690,758

TANK FILLED WITH DEVELOPING LIQUID IN ELECTROPHOTOGRAPHIC APPARATUS

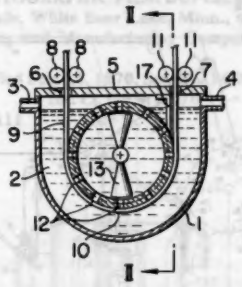
Wilhelm Josef Knechtel, 6301 Rodheim, Paulinen Str. 24, Rodheim, and Detlef Schaffer, 6330 Wetzlar, Kornmarkt 6, Wetzlar, both of Germany

Filed July 13, 1970, Ser. No. 54,389

Claims priority, application Germany, July 14, 1969, P 19 35 615.1

Int. Cl. G03g *15/10*

U.S. Cl. 355—10 **7 Claims**



Developing apparatus for electrophotographic use includes a tank containing developing liquid, a cylinder having an apertured sidewall supported for rotation in the tank and a propeller creating reduced pressure within the cylinder. Sheets bearing electrostatic images are attracted to the cylinder and maintained in contact with the apertured sidewall by suction. Upon development the sheets are peeled from the cylinder by fingers juxtaposed with reduced diameter sidewall areas.

3,690,759

ELECTRONIC PHOTOCOPYING MACHINE

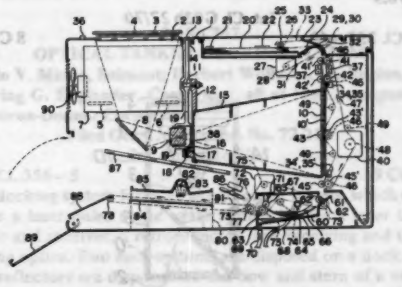
Teizo Kushima, Osaka; Susumu Tanaka, Ditto, and Masaya Ogawa, Ditto, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed April 18, 1966, Ser. No. 543,226

Claims priority, application Japan, July 27, 1965, 40/45427; Aug. 26, 1965, 40/70129; July 2, 1965, 40/54051; Aug. 20, 1965, 40/50816; Aug. 18, 1965, 40/67863; Aug. 17, 1965, 40/50077; July 27, 1965, 40/45427; Sept. 10, 1965, 40/74304

Int. Cl. G03g *13/10*

U.S. Cl. 355—10 **1 Claim**



A feeding and conveying arrangement for sheets of xerographic copy paper passing through the recording and developing sections of a photocopying machine. Three feed-

ing mechanisms are provided, one to take sheets from the magazine, a second to take the sheets through the exposure station, this one being on a pivotal assembly, and a third for feeding the sheets through the developing means at a lower velocity than that at which the others operate, means being provided to accommodate a temporary loop of paper until it can be handled by the slower developing feeder.

3,690,760

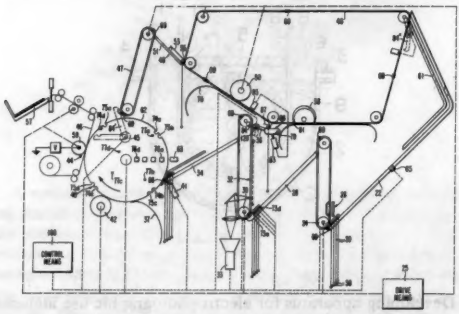
ELECTROSTATIC PRINTING SYSTEM

Willard K. Banks, Cupertino, and James L. Lyon, Los Gatos, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed April 5, 1971, Ser. No. 131,311

Int. Cl. G03g *15/00*

U.S. Cl. 355—16 **18 Claims**



An electrostatic printing apparatus wherein photoconductive elements are individually movable through process stations for charging, exposing and developing an electrostatic image, and wherein the photoconductive element is fed through a process buffer means between each of the stations so that asynchronous operation results. A plurality of the photoconductive elements with the electrostatic image are cycled a predetermined number of times through the development and transfer stations at a higher rate so that multiple copies can be printed from a single image deposition for each of the photoconductive elements without slowing the operation of the other parts of the system.

3,690,761

ACCESSORY FOR OPTICALLY REVERSING THE IMAGE IN COPY CAMERAS

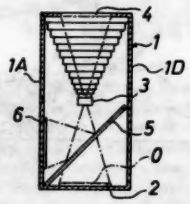
Jeff Green, Ramsey, N.J., assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 8, 1970, Ser. No. 96,061

Claims priority, application Germany, Dec. 10, 1969, G 69 47 770.9

Int. Cl. G03b *27/70*

U.S. Cl. 355—43 **8 Claims**



An accessory for use in vertical or horizontal copy cameras to optically reverse the image of an original. A frame of the accessory is insertable into the housing of a copy camera between the lens and the easel for originals and carries a mirror which makes with the optical axis of the lens an angle of 45°. The frame further carries a second easel which can be placed in front of the mirror so that it is located at 90° to the easel of the camera. The image of an original which is placed onto the second easel is reversed so that the camera can make right reading negative or positive copies.

3,690,762

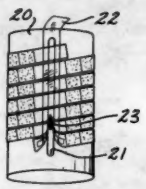
METHOD OF PRODUCING A MICROFICHE

Julian Silver, White Plains, N.Y., assignor to U.S. Dynamics Inc., Elmsford, N.Y.

Filed July 20, 1970, Ser. No. 56,393

Int. Cl. G03b *27/32*

U.S. Cl. 355—77 **5 Claims**



A method of recording and displaying photographic images includes the steps of exposing a series of image areas on a film strip, leaving blank areas at predetermined locations on the film strip, processing the film strip to produce image transparencies thereon, arranging the film strip in the form of a helix with portions of each of the blank areas aligned, securing the blank areas to one another, cutting through the film strip in the blank areas to form the image areas into a matrix having the form of a parallelogram, and positioning the matrix to project selectively the images thereon for viewing purposes. The apparatus includes a photographic system with a camera for exposing a series of image areas on a film strip with blank areas disposed at predetermined locations on the film strip, and after the film is processed, the film strip is wound in the form of a helix on a drum or a cylinder with the unexposed areas disposed over a slot in the drum. The unexposed film areas are secured together, as by an adhesive, and the film is cut along the unexposed areas over the slot whereby a matrix in the form of a parallelogram is produced. The matrix in the form of a parallelogram is composed of a plurality of columns of photographic images with each column having a plurality of rectangular photographic film areas disposed in series. The rectangular film areas of each column are offset relative to the corresponding film areas of adjacent columns. An image viewer has a carrier which holds the matrix array of rectangular photographic and film areas, and the carrier may be moved in two dimension back and forth or right and left. The carrier has an arm which extends over an index mat which includes an array of rectangular elements likewise disposed in the format of a parallelogram. The carrier and the index mat have a pantographic type relationship whereby the position of the carrier is indicated by the index mat.

3,690,763

APPARATUS FOR COMPUTING COLOR BALANCE CHARACTERISTICS AND PREPARING IMPROVED COLOR PRINTS

Robert W. Mitchell, 707 Myrtle Ave., Saint Joseph, Mich.

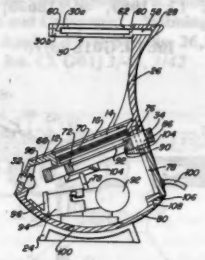
Continuation-in-part of Ser. No. 478,665, Aug. 10, 1965, Pat. No. 3,443,868. This application Feb. 27, 1967, Ser. No. 618,799

Int. Cl. G03b *27/24*

U.S. Cl. 355—88 **7 Claims**

A colorimeter which is adapted for accurately comparing an unknown light with a light of standard color to enable the ad-

justment or compensation of the unknown color to produce a desired effect in photography or the like. One colorimeter is on a universal mounting and has a filter support spaced from a comparing surface to direct the unknown light with filter compensation along an axis unto a small central mirror mounted at



an angle to the light axis on the comparing surface. A source of known light of controlled and constant color and intensity is within the colorimeter and illuminates the comparing surface around the small mirror. The disclosure includes alternate embodiments and unique methods of utilizing the colorimeter.

3,690,764

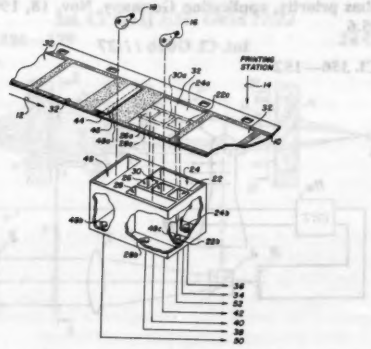
Patent Not Issued For This Number

3,690,765

APPARATUS FOR ADVANCING UNPRINTABLE NEGATIVES THROUGH PHOTOGRAPHIC PRINTERS

Robert K. Rickard, and William C. Klein, both of Rochester, N.Y., assignors to Eastman Kodak Company

Filed April 13, 1971, Ser. No. 133,649
Int. Cl. G03b 27/04
U.S. Cl. 355—97 24 Claims



Apparatus responsive to the detected density of a plurality of peripheral background areas of a negative and the central area of a negative determines whether the negative is suitable for producing an acceptable print and whether classification correction is necessary in printing the negative. Over-exposed or fogged negatives and under-exposed or blank negatives are detected by a comparison of the peripheral and central area density with reference densities to generate an unprintable negative signal. A splice signal is also generated upon the detection of a splice connecting negative strips. Apparatus responsive to the unprintable negative signal and the splice signal advances unprintable negatives or negatives otherwise unsuitable for producing acceptable prints and splices, respectively, through the printing station of the printer without printing the negative or the splice. However, if all negatives in a negative strip are determined to be unprintable, the last unprintable negative is printed so that an order sort mark may be placed on the print to keep the group of prints in each customer's order coordinated with its respective negative filmstrip.

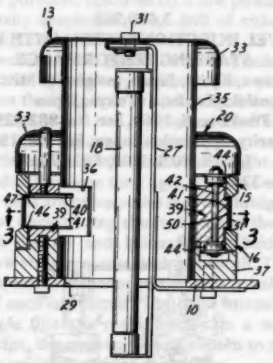
If the negative is determined to be printable, the densities of the central and peripheral areas of the negative are compared to each other in a predetermined manner to determine if the negative exhibits an unequal distribution in density indicating a subject failure. Apparatus is provided to activate classification correction factors provided on the printer in response to the classification of the negative.

3,690,766

PHOTOGRAPHIC FILM DUPLICATOR

George G. Lunde, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 25, 1970, Ser. No. 14,095
Int. Cl. G03b 27/10
U.S. Cl. 355—111 9 Claims



A photographic film duplicator in which an original film is supported by its longitudinal edges at a constant radius from a line source of radiation at a duplicating station with the original film between the source of radiation and a radiation sensitive duplicating film in intimate contact with the original film to permit radiation from the source to be projected through the original film to image the duplicating film.

3,690,767

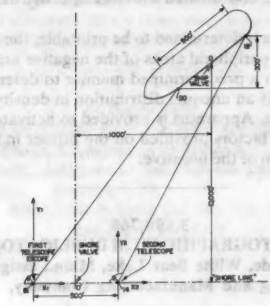
OPTICAL TANKER-DOCKING SYSTEM

Danilo V. Missio, Belmont; Herbert Wollman, Burlington, and Irving G. Englander, Cambridge, all of Mass., assignors to Systron-Donner Corporation

Filed Oct. 1, 1970, Ser. No. 77,214
Int. Cl. G01c 3/08
U.S. Cl. 356—5 9 Claims

A docking system for large ocean-going vessels, which comprises a laser pulse range radar system having a laser transmitter and receiver, a retroreflector, and receiving and transmitting optics. Two such systems are disposed on a dock. The retroreflectors are disposed on the bow and stern of a vessel. The laser systems share a time interval meter, a computer, and a display panel. The lasers track the retroreflectors as the ship approaches the dock, and the time interval between the transmitted and received pulses is measured. Computations are

made and the velocity of the approaching vessel, its distance from the dock, and the vessel position with reference to the



dock are continually displayed. This information is then transmitted to the ship's captain.

3,690,768

DIESEL FUEL INJECTION SYSTEM WITH IMPROVED STARTING PERFORMANCE

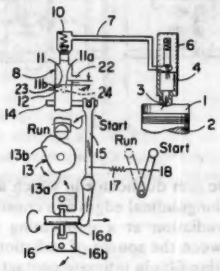
Shigeo Nagasawa, Kyoto, Japan, assignor to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 8, 1969, Ser. No. 882,829

Claims priority, application Japan, Feb. 28, 1969, 44/14560

Int. Cl. F02b *3/00*; F02n *17/00*

U.S. Cl. 123—32 G **1 Claim**



A fuel injection system for a diesel engine has a plunger barrel with a fuel intake port and a plunger slidable axially in the barrel. A plunger operating cam has a pair of lobes for operating the plunger. During either the intake or the compression stroke, the cam advances the plunger to a first position blocking the port to inject fuel, after which the plunger retracts. At the end of the compression stroke, the cam advances the plunger further to a second position to block the port to inject fuel. A switching device is effective to rotate the plunger between a starting position and a running position. In the starting position, the peripheral surface of the plunger blocks the port during the two fuel injection strokes of the plunger and, in the running position, the plunger is rotated to a position where its peripheral surface blocks the port only upon the further advance of the plunger to the second position. The invention improvement comprises at least one fuel passage in the plunger connecting the peripheral surface to the inner end face of the plunger and communicating with a by-pass fuel intake port in the barrel, only during starting of the engine, and in the second plunger position. The by-pass fuel intake port is spaced angularly from the main fuel intake port.

3,690,769

ENDOSCOPE WITH BUILT-IN OXIMETER

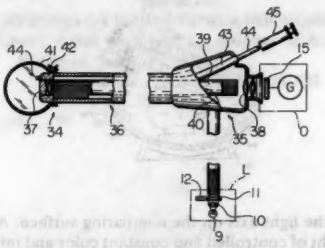
Toshiyuki Mori, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 7, 1970, Ser. No. 95,479

Claims priority, application Japan, Dec. 12, 1969, 44/100359; Dec. 12, 1969, 44/118626; Dec. 12, 1969, 44/118627

Int. Cl. G01n *33/16*

U.S. Cl. 356—41 **3 Claims**



An endoscope is provided with an inflatable, transparent bag enveloping the objective in the forward end portion and capable of being inflated by air from the control housing. The light reflected from the patient's blood through the bag into the objective and transmitted by a bundle of optical fibers to the control housing is analyzed for its content of red and infrared radiation as a measure of the oxygenation of the blood, the analysis apparatus being connected either to the eyepiece in the control housing or to a separate outlet receiving a portion of the image forming light through a beam splitter so that visual inspection of an internal organ can be performed alternatingly or simultaneously with the oximetric analysis.

3,690,770

METHOD TO MEASURE MIRROR DEFLECTION

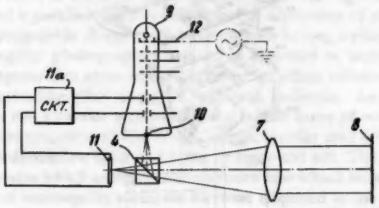
Siegfried Raith, Nelkenweg 23, D-8510, Fuerth, Germany

Filed Nov. 16, 1970, Ser. No. 89,697

Claims priority, application Germany, Nov. 18, 1969, P 19 57 905.6

Int. Cl. G01b *11/27*

U.S. Cl. 356—152 **7 Claims**



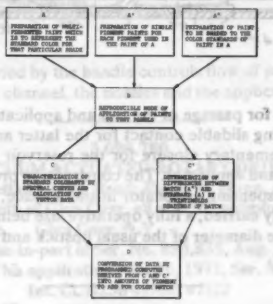
A dynamic autocollimator telescope for measuring mirror deflections having a point source of light, a lens for converging the light, and beam splitter positioned between the light source and the lens for directing diverging light from the source to the lens. The lens converges the received light into parallel rays which are directly substantially normally onto the face of the mirror whose deflections are to be measured. The mirror reflects the incident parallel light back through the lens and the beam splitter which passes the reflected light to a photo detector located at the focal point of said lens. The detector generates electric signals proportional to the position of said light on the photo detector and the signals are used to adjust the position of the light source so that the reflected light always appears in the same location on the photo detector.

3,690,771

METHOD AND APPARATUS FOR INSTRUMENTALLY SHADING METALLIC PAINTS

William S. Armstrong, Jr., Phoenixville; Webster H. Edwards, Springfield, both of Pa.; Joseph P. Laird, Wilmington, Del., and Roy H. Vining, Swarthmore, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed April 7, 1970, Ser. No. 26,269
Int. Cl. G01j 3/46, 3/42
U.S. Cl. 356—176 6 Claims



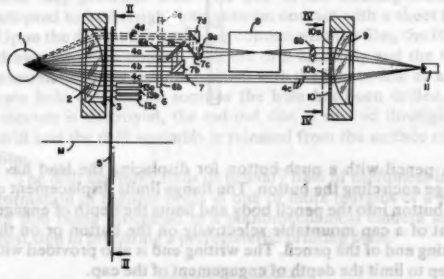
A system which can be used in the paint manufacturing industry to shade batches of paint to desired standard color based on standard values for the standard color by use of physical differences of the paint to be shaded and the standard paint determined from tristimulus values derived from panels sprayed with the respective paints.

3,690,772

PHOTOMETER FOR CARRYING OUT MEASUREMENTS AT DIFFERENT WAVE LENGTHS

Alfons Endl, Munich, Germany, assignor to Bio-Cal Instrument Company, Richmond, Calif.

Filed July 31, 1970, Ser. No. 60,053
Claims priority, application Germany, July 31, 1969, P 19 39 034.2
Int. Cl. G01j 3/50; G01n 21/22
U.S. Cl. 356—179 24 Claims



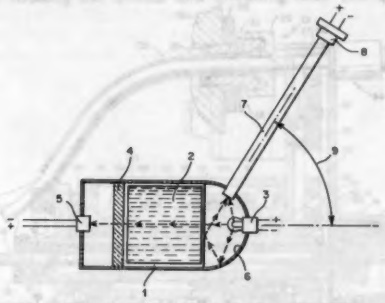
Apparatus for measuring the optical characteristics of a sample by determining the absorption of light of different wave lengths by the sample. Light pulses are transmitted via at least three light ray paths at intermittent intervals so that no more than one light path is illuminated during any instant of time. The pulses of one path are used as a reference pulse and the remaining pulses are filtered, aligned and passed through the sample. Light passing the sample as well as light on the referenced paths are then directed to a single photocell. Output signals from the photocell are identified as to which light path they correspond and are maintained steady to prevent light source intensity variations or the like from influencing the reading. The magnitude of the signals is compared with a constant reference signal to determine the optical transmission and/or absorption characteristics of the sample under investigation.

3,690,773

DUAL PHOTOCONDUCTIVE CELL PHOTOMETER

Frank Malley, Gloucester Heights, N.J., assignor to Unilex, Inc., Pennsauken, N.J.

Filed Nov. 19, 1970, Ser. No. 91,033
Int. Cl. G01j 3/46, 3/48; G01n 21/22; G01j 1/04
U.S. Cl. 356—181 12 Claims



A photometer for measuring the color of aqueous solutions such as polluted water with great sensitivity is provided. The photometer is portable, operates on a low power source, and retains sensitivity despite shock or drift of either the energy source or the light source.

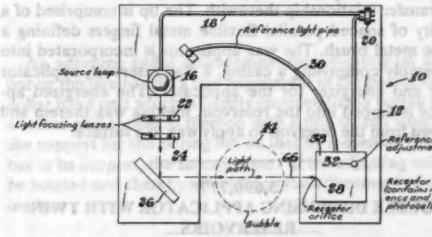
The photometer utilizes photoconductive cells in a manner to eliminate the "light history" effect. A sample filter cell is placed between the lamp source and a regulating filter, which in turn is in front of a first cell, the second filter being designed to reduce the total light reaching the first cell. A second photoconductive cell is positioned to view light directly from the source and at the same time light reflected off of the sample filter. The cells are on opposite legs of a bridge circuit with each leg of the circuit being shunted around the cells to provide for drift control and balance. The bridge circuit is operated at low voltage across each photocell. The difference between the spectral response of the cells is balanced by the impedence of each leg circuit. The color intensity difference between sample filters is read directly on a microammeter across the bridge, the ammeter being chosen to provide as little impedence across the bridge as possible.

3,690,774

CONTINUOUS OPTICAL QUALITY CONTROL MONITOR

Sherman Kottle, Lake Jackson, Tex.; William P. Carl, and Walter L. Vaughn, both of Angleton, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 26, 1971, Ser. No. 119,214
Int. Cl. G01n 21/30
U.S. Cl. 356—206 7 Claims



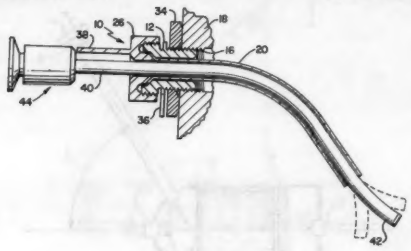
This invention relates to an instrument for continuously measuring the gloss of thin essentially transparent plastic films as the film is in the light path of the instrument. The instrument uses a beam of visible light directed through the film in such a manner that the transmitted intensity is a measure of the gloss of the film. This device makes lengthy laboratory testing of film optical properties unnecessary because the measurement can be made as the film is being fabricated.

3,690,775

BORESCOPE FIXTURE

Nicholas T. Cousins, Bridgeport, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed Sept. 1, 1971, Ser. No. 176,897
Int. Cl. G01n 21/16
U.S. Cl. 356—241 3 Claims



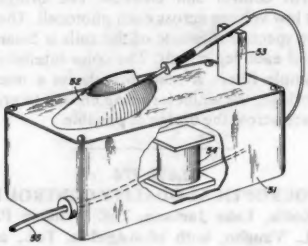
A fixture to permit use of a flexible borescope to inspect inaccessible recesses of engines is disclosed. The borescope fixture is adapted to be fitted into an existing threaded hole of the engine. A semi-rigid tube is shaped to reach from the hole in the engine casing to the engine location of interest so as to permit the flexible borescope to reach such location for visual inspection thereof.

3,690,776

WAX APPLICATOR

Kirill M. Zaporoshan, 5 Alcott Drive, Livingston, N.J.

Filed March 16, 1970, Ser. No. 19,615
Int. Cl. B43m 1/02
U.S. Cl. 401—1 2 Claims



A wax applicator comprised of a elongated pencil-type soldering iron having a wax applicating tip mounted in direct heat transfer relationship therewith. The tip is comprised of a plurality of spaced parallel flexible metal fingers defining a flexible metal brush. The wax applicator is incorporated into an assembly comprising a casing, a wax reservoir, applicator holder and energizer for the applicator. The energized applicator is dipped into the reservoir, melting wax therein and removed from the reservoir to apply wax to a surface.

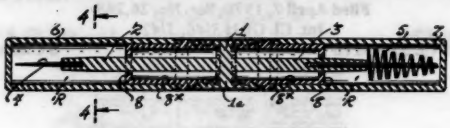
3,690,777

DOUBLE DISPENSING APPLICATOR WITH TWIN RESERVOIRS

Allan A. Costa, 682 Udall Street, West Islip, N.Y.

Filed Aug. 5, 1970, Ser. No. 61,169
Int. Cl. A46b 11/00
U.S. Cl. 401—17 4 Claims

The embodiment shown in the drawing comprises a central cylindrical member which at each end is formed with internally threaded sleeves meeting a solid area from which integrally project oppositely directed rods, one of the rods carrying, in the said embodiment, an eyeliner narrow brush, and the second rod carrying a spiral mascara applicator. The assembly includes two cover members, each of which is a reservoir for the appropriate cosmetic, and each cover member serves as a handle when the opposite cover is removed for use of the particular applicator exposed when said cover is removed. The reservoir in each cover lies toward its closed end, forwardly of which is an internal cover wall formed with



an aperture for passage of the rod and applicator, but the wall closely having slidable contact for the latter and serving both as a complementary closure for the reservoir and as a wiper for the rod and applicator. The construction provides a double cosmetic dispensing applicator in small space, and one which can be safely carried, a fully operative size being, for example, less than the diameter of the usual lipstick and only about one third longer.

3,690,778

PUSH-BUTTON TYPE WRITING INSTRUMENT WITH A CAP

Tatsuo Hirota, Saitama-ken, Japan, assignor to Pentel Co., Ltd., Tokyo, Japan

Filed July 30, 1970, Ser. No. 59,534
Claims priority, application Japan, July 31, 1969, 44/72387
Int. Cl. B43k 21/18, 23/00
U.S. Cl. 401—66 4 Claims

A pencil with a push-button for displacing the lead has a flange encircling the button. The flange limits displacement of the button into the pencil body and limits the depth of engagement of a cap mountable selectively on the button or on the writing end of the pencil. The writing end is also provided with a step to limit the depth of engagement of the cap.

3,690,779

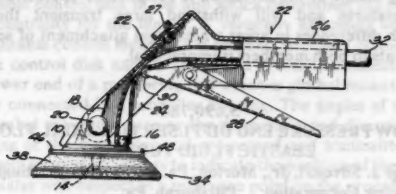
WIPE-ON PAINT APPLICATOR WITH PRESSURIZED FEED

Donald A. Ellis, New Berlin, Wis., assignor to Bastt Rollr, Inc., Fond du Lac, Wis.

Filed Oct. 8, 1970, Ser. No. 79,067
Int. Cl. A46b 11/02
U.S. Cl. 401—266 3 Claims

A wipe-on paint applicator has a feeder head to which a handle is pivotally mounted. This head has depending nozzles which are connected internally to a distribution channel. An applicator provided with nozzle receiving pockets with small outlets is mounted on the head with the nozzles projecting into the pockets. A flexible tube passing through the handle has its

outlet end connected to the distribution channel and its inlet end connected to a source of paint under pressure. A pinch



type valve carried by the handle controls flow of paint through the tube to the channel, the nozzles and the applicator.

3,690,780

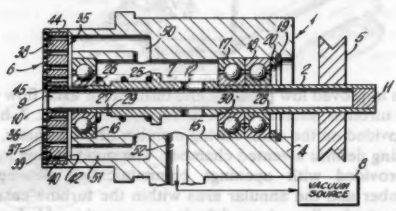
VACUUM ACTUATED ROTARY DRILL

John Louis Bjelland, Glen Head; Floyd W. Flynn, and Norman C. Schutt, both of Glen Cove, all of N.Y., assignors to Powers Chemco, Inc., Glen Cove, N.Y.

Continuation-in-part of Ser. No. 853,835, Aug. 28, 1969, abandoned. This application Feb. 26, 1971, Ser. No. 119,193

Int. Cl. B23b *41/00, 47/22*

U.S. Cl. 408—58 **5 Claims**



A motor-driven hollow drill member having a cylindrical bit or cutting edge to engage a sheet of photographic film or the like is rotationally and slidably supported in a housing connected to a vacuum pump by apertures communicating with the exterior and interior of the hollow drill. The bit end of the drill may protrude from one end of the housing which is adapted to be brought into vacuum contact with a sheet film. Upon the drill housing making contact with the film, the film is drawn into firm contact with the drill assembly and the bit is pneumatically urged into contact with the film to drill an accurate hole therein. As soon as the hole has been drilled, the vacuum is destroyed, the cut-out disc is sucked through the drill and the drill assembly is released from the surface of the film.

The drill assembly finds its primary field of usefulness in the formation of register holes in one or more margins of a sheet of film being processed in a photomechanical camera as the first step in preparing a preregistered printing plate.

3,690,781

Patent Not Issued For This Number

3,690,782

LEAD-SCREW TAPPING HEAD

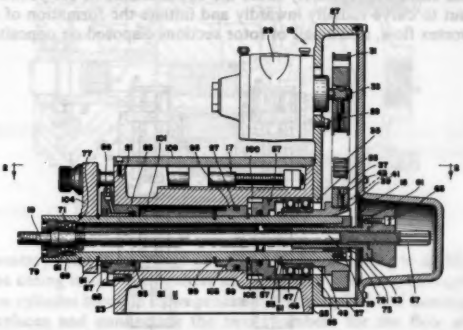
Robert J. Petroff, 1703 S. Main Street, Lombard, Ill.

Filed June 27, 1969, Ser. No. 837,093

Int. Cl. B23g *1/00, 1/04*

U.S. Cl. 408—132 **4 Claims**

Lead screw tapping apparatus for guiding and feeding a threading tool into a workpiece. The apparatus comprises an axially movable quill within which is rotatably mounted a spindle holding the threading tool. The quill is rapidly advanced and retracted from the proximity of the workpiece by means of supplied superatmospheric gas pressure acting on a piston fixedly mounted on the quill. The rapid advancement of the quill engages a clutch element, attached to a lead screw, with a corresponding clutch element rotated by a drive means, thereby advancing an associated lead nut having threads of the same pitch of the threads formed by the tool, while simultaneously rotating the spindle and threading tool. The quill (to



which the lead nut is secured) the spindle and the threading tool are advanced at the same rate, the tool thus forming the threads in the workpiece. Obstacles or forces encountered during the threading operation which are greater in magnitude than the total resultant force produced by the preselected gas pressure acting on the piston disengage the clutch surfaces thereby stopping the operation and saving the threading tool from destruction.

3,690,783

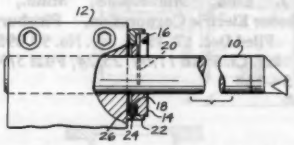
ADJUSTING COLLAR ARRANGEMENT, ESPECIALLY FOR A BORING BAR

James W. Heaton, Greensburg; William C. Eversole, and Ernest J. Friedline, both of Latrobe, all of Pa., assignors to Kennametal Inc., Latrobe, Pa.

Filed June 22, 1970, Ser. No. 47,947

Int. Cl. B23b *29/02*

U.S. Cl. 408—146 **4 Claims**



An adjusting collar arrangement for mounting on a boring bar or the like to effect fine adjustment of the boring bar. The collar has a part which is fixedly clamped to the boring bar and another part threaded thereon with a fine thread which abuts the support for the boring bar so that by loosening the boring bar in its support, the threaded part of the adjusting collar can be rotated and thereby effect fine axial adjustment of the boring bar.

3,690,784

TURBINE

Desmond J. Farrow, R.D. 2, North East, Md.

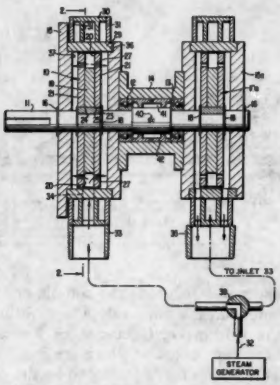
Filed Oct. 14, 1970, Ser. No. 80,556

Int. Cl. F01d *1/12*

U.S. Cl. 415—55 **12 Claims**

A small-sized turbine designed for use with a steam generating chamber comprises a pair of rotors mounted in spaced

relation on an axial support for rotation about the axis in clockwise and counter-clockwise directions, respectively, according to the application of steam to one or the other of the rotors for obtaining either forward or reverse operation, as desired. Each rotor is formed of a central section having a plurality of circumferentially spaced pockets in the periphery thereof, with the peripheral edges between these pockets being slightly sloped for receiving the steam input and causing the same not to merely strike the opposite side of the pocket, but to curve radially inwardly and initiate the formation of a vortex flow, and a pair of rotor sections disposed on opposite



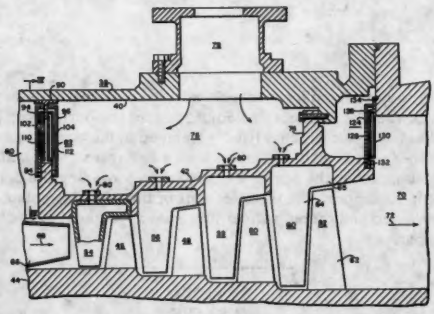
sides of the central rotor section being keyed thereto for rotary movement therewith and having lateral apertures spaced about the periphery thereof which extend from the side adjacent the central rotor to the opposite outside face, for providing a reaction outlet from each of the pockets of the central rotor section. The rotors are disposed in separate stators, each having spaced steam inlets for introducing the steam tangentially over the sloped peripheral edges of the central rotor section, and are keyed to a shaft which is supported in bearings positioned between and outside the stator housings for causing rotation of the same in a predetermined direction.

3,690,785

SPRING PLATE SEALING SYSTEM

LeRoger J. Lind, Minneapolis, Minn., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 17, 1970, Ser. No. 99,095
Int. Cl. F01d *11/02, 25/24*; F02f *5/00*
U.S. Cl. 415—108 **9 Claims**



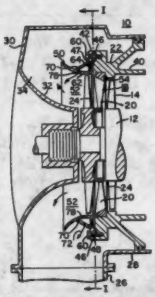
Sealing means for the ends of an enclosure defined between essentially concentric cylindrical members having different thermal expansion properties, characterized in that the sealing means is formed from segments each comprising a plate having a generally L-shaped cross section with one leg of the cross section being attached to one of the concentric members and the other leg, at right angles to the first, being spring-biased against a radially extending surface on the other member. The sealing means of the invention is designed to operate at high temperatures and will withstand large transient thermal growth differences in areas where rigid attachment of sealing elements to both members is impractical.

3,690,786

LOW PRESSURE END DIFFUSER FOR AXIAL FLOW ELASTIC FLUID TURBINES

George J. Silvestri, Jr., Morton, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 10, 1971, Ser. No. 141,679
Int. Cl. F01d *1/00, 25/32*; F01b *25/00*
U.S. Cl. 415—121 **8 Claims**



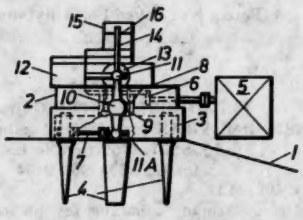
An improved low pressure end diffuser for axial flow elastic fluid turbines, such as steam turbines, is disclosed. A housing is provided on the outer fairing member of the diffuser, which housing defines a vented chamber. The outer fairing member is provided with openings communicating between the chamber and the annular area within the turbine casing adjacent the leading edges of the last stage turbine blades. Injection slots are formed in the outer fairing member to communicate between the chamber and the exhaust outlet downstream of the trailing edges of the last stage turbine blades. The injection slots are formed in such a manner that the fluid will flow from the chamber along a major portion of the inner surface of the outer fairing member whereby fluid boundary layer on the fairing surface will be accelerated to prevent separation of the boundary layer from the surface thereby resulting in improved diffuser performance.

3,690,787

APPARATUS FOR INDICATING THE POSITION OF THE CONTROL CENTER FOR THE BLADES OF A ROTATING BLADE PROPELLER

Harald Gross, Sohnstetten, Germany, assignor to J. M. Voith GmbH, Heidenheim/Brenz, Germany

Filed May 7, 1971, Ser. No. 141,205
Claims priority, application Germany, May 16, 1970, P 20 24 146.7
Int. Cl. B63h *1/10*
U.S. Cl. 416—61 **6 Claims**



A blade wheel ship propeller has a rotatable hub from which a plurality of blades extend vertically downwardly adjacent

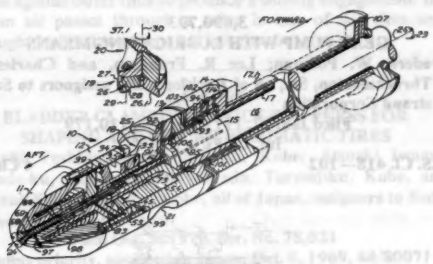
the periphery thereof with the blades being pivotable about their longitudinal axes. The blades are connected to a displaceable control disk in the hub which determines the center of eccentricity for the blades. A vertically extending universally tiltable control member has one end pivotably connected to the control disk and its upper end pivotally connected to the lower end of a measuring rod which is gimbal mounted or firmly connected in a propeller housing. The angles of tilt of the gimbal mounting axes or the magnitude and direction of bending of the measuring rod are sensed and transmitted to remotely located indicators to indicate the position of the control center with respect to a reference point on the propeller.

3,690,788

CONTROLLABLE PITCH PROPELLER

James M. Pedersen, 3809 Puget Drive, Vancouver 8, British Columbia, Canada

Filed Feb. 16, 1970, Ser. No. 11,686
Int. Cl. B63h *3/08*
U.S. Cl. 416—157 **5 Claims**



Hydraulically activated controllable pitch propeller mechanism adapted to be secured to a tailshaft of a vessel without material modification of the shaft. Can be used to convert existing installations to controllable pitch, and in new installations. Propeller hub has attachment flange and rotary seal, internal hollow shaft has a piston and a crosshead, axial motion of the shaft effecting alteration of pitch of propeller blades. Hydraulic fluid introduced into the hollow shaft through the seal moves a pilot spool within the shaft movement being responsive to difference in pressure upon opposite ends of the spool. Pilot spool acts as a valve, motion admitting hydraulic fluid to move the piston so altering the pitch. Full hydraulic pressure within the hub only during pitch alteration. The rotary seal eliminates hollow tailshaft used on many prior art constructions.

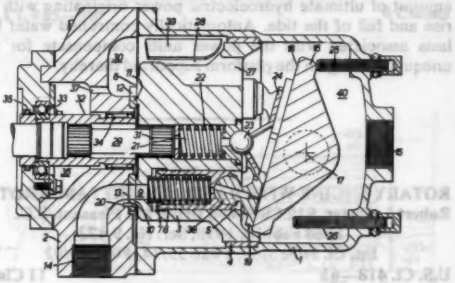
3,690,789

HYDRAULIC APPARATUS

Peter Spence, Leckhampton, England, assignor to Dowty Technical Developments Limited

Division of Ser. No. 690,369, Dec. 8, 1967, Pat. No. 3,612,725.
This application May 1, 1970, Ser. No. 33,717
Int. Cl. F04b *23/14*
U.S. Cl. 417—203 **5 Claims**

A swash plate pump or motor comprising a rotary cylinder block having cylinders either parallel to or inclined to the rotation axis, a valve on which the block is arranged to rotate, an inclined or inclinable swash plate located adjacent to one end of the cylinder block engageable by cylinders either directly or through the medium of slippers whereby the pistons are reciprocated as the block rotates, a casing enclosing the valve cylinder block and swash plate, the end portion of the cylinder block adjacent to the swash plate having a cylindrical journal bearing surface engaging within a complementary cylindrical bearing surface within the casing to divide the casing into two chambers and passages extending through the cylinder block in close proximity to the cylindrical bearing surfaces and connecting the two chambers for the flow of liquid therethrough during operation of the pump or motor.

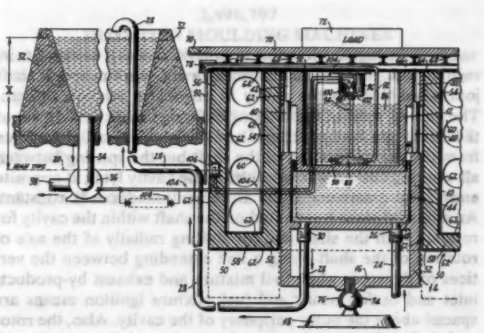


3,690,790

TIDE-POWERED UNIT AND FLOATING PLATFORM UTILIZING SAME

George H. Hooper, 2092 East Main Street, Bridgeport, Conn.

Filed Dec. 7, 1970, Ser. No. 95,543
Int. Cl. F04b *17/00, 35/00, 21/02, 39/10;* **F01b** *19/00*
U.S. Cl. 417—331 **9 Claims**



A tide-powered unit for generating electrical power, comprising a relatively large-diameter cylinder and piston therein, disposed with their axes vertical, the piston being capable of a raising and lowering movement through the open top of the cylinder. The lower portion of the cylinder is attached to a base or anchorage located on the bottom of a large body of water the level of which is influenced by tides. The piston is operatively connected to a float whereby both will rise and fall as the tide comes in and goes out. The cylinder has inlet and outlet passages which are valved to permit ingress of water into the cylinder as the piston rises, and to provide for egress of water from the cylinder as the piston descends. The outlet, through which the water leaves the cylinder, goes to a reservoir located above the high tide mark whereby the rise and fall of the tide causes a pumping of tide water into the reservoir. When the reservoir fills, the water stored therein can be used to turn hydroelectric generators for generating electric power. A multiplicity of such power units is shown as being disposed side by side beneath a large platform whereby the latter is supported by the floats of the units and can carry buildings, equipment and other facilities. Where the supported platform is suf-

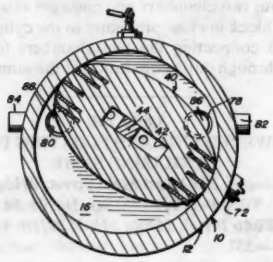
ficiently large, it functions also as an air strip for the landing and take-off of aircraft. The platform imperceptably rises and falls with the tides whereby it is always at a given fixed level above the surface of the body of water. The large number of power units supporting the platform totalize to provide a large amount of ultimate hydroelectric power originating with the rise and fall of the tide. Automatically controlled water ballasts associated with the power units compensate for any unequal loading on the platform supported thereby.

3,690,791

ROTARY ENGINE WITH RADIALLY SHIFTABLE ROTOR

Robert L. Dieter, 919 Cliffwood Drive, Mt. Pleasant, S.C.

Filed Feb. 10, 1970, Ser. No. 9,473
Int. Cl. F03c 3/00; F02b 55/14; F01c 19/02
U.S. Cl. 418—61 11 Claims



A rotary engine including a hollow housing having an irregular but generally cylindrical cavity therein and a shaft journalled through the cavity in off-center relation thereto. The curved walls of the housing defining and extending about the cavity gradually increase and decrease in radial distance from the axis of rotation of the shaft but the spacing between all working curved wall portions of the cavity lying at opposite ends of all diameters of the aforementioned axis is constant. An elliptical rotor is mounted on the shaft within the cavity for rotation with the shaft and for shifting radially of the axis of rotation of the shaft along a line extending between the vertices of the rotor while fuel mixture and exhaust by-products inlet and outlet means and fuel mixture ignition means are spaced about the outer periphery of the cavity. Also, the rotor and shaft define a rotary assembly having axially extending air passages extending therethrough opening through opposite ends of the housing with air vane structure carried by one end of the rotary assembly operative to pump cooling air through the air passages in response to rotation of the assembly.

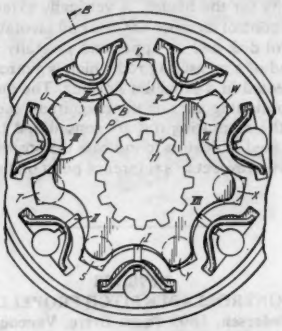
3,690,792

TOOTHED WHEEL MACHINE

Alex Petersen, Sonderborg, Denmark, assignor to Danfoss A/S Nordborg

Filed Dec. 10, 1970, Ser. No. 96,721
Claims priority, application Germany, Dec. 15, 1969, P 19 62 769.1
Int. Cl. F01c 1/02; F04c 1/02, 17/02
U.S. Cl. 418—61 2 Claims

The invention relates to a gear set of the type comprising a generally annularly shaped internally toothed ring member and an externally toothed star member having at least one fewer teeth than the ring member. The star member has an axis disposed eccentrically relative to the axis of the ring member. These parts are normally formed with low tolerances to facilitate fluid tight sealing between the meshing teeth. A different mode of sealing is provided which comprises sealing plates slidably disposed in radially extending slots formed in the ring member teeth.

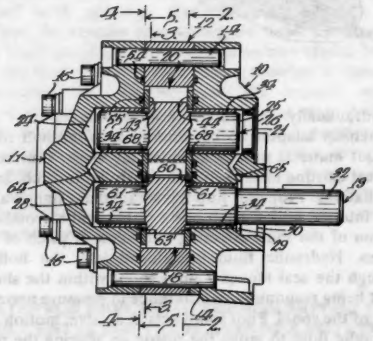


3,690,793

GEAR PUMP WITH LUBRICATING MEANS

Frederic W. Pollman; Lee R. Frandsen, and Charles D. Throckmorton, Sr., all of Rockford, Ill., assignors to Sundstrand Corporation

Filed Jan. 27, 1971, Ser. No. 110,179
Int. Cl. F01c 21/04
U.S. Cl. 418—102 4 Claims



A high pressure rotary spur gear pump including a pair of gear members intermeshing at a location between an inlet and an outlet, a pair of shafts carrying the gear members and having opposite ends mounted in bearing sleeves, together with means for pumping lubricating fluid under pressure from an area at the zone of intermeshing teeth, where the spaces between teeth are decreasing in volume, outwardly along the bearing sleeves at opposite ends of one shaft and back along the bearing sleeves at opposite ends of the other shaft, to the pump inlet.

3,690,794

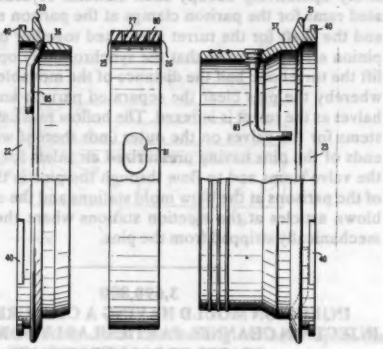
TIRE BEAD SEALING AND SUPPORTING MEANS FOR RETREADING MOLD

Donald Elston Shellabarger, 1110 Mac Nichol Lane, Chattanooga, Tenn.

Filed Aug. 1, 1969, Ser. No. 846,824
Int. Cl. B29h 5/04
U.S. Cl. 425—21 2 Claims

An apparatus is provided for retreading tires without the use of an air bag or tube. Sound fluid tight integrity during initial

tire inflation is provided by a bead seater means, preferably in the form of an internal annular belt which presses the tire



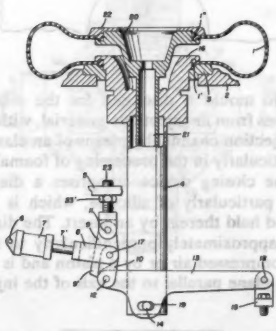
beads against outer rims to produce a sealing engagement. Inflation air passes through a valve in one of the rims and through the bead seater means into the tire.

3,690,795

BLADDER CLAMPING DEVICE FOR PRESS FOR SHAPING AND CURING PNEUMATIC TIRES

Shoushi Yoshida, Higashinada-ku, Kobe; Atsuakl Iwama, Nada-ku, Kobe; Takashi Okada, Tarumi-ku, Kobe, and Tetuo Suda, Nada-ku, Kobe, all of Japan, assignors to Kobe Steele, Ltd., Kobe, Japan

Filed Oct. 5, 1970, Ser. No. 78,021
Claims priority, application Japan, Oct. 6, 1969, 44/80071
Int. Cl. B29h *5/02*
U.S. Cl. 425—29 3 Claims



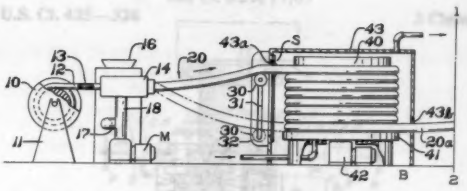
A press for shaping and curing tires having an inflatable bladder with a device for positively clamping the lower bead of the bladder between a lower stationary bead ring and a lower plate ring connected with the vertical cylinder of the center mechanism wherein the vertical cylinder is raised and lowered by an actuating device having a drive unit, a power converting mechanism transforming the output of the drive unit into mechanical motion acting in a direction axially of the vertical cylinder, and a motion transmitting device connecting the output of the power converting mechanism to the vertical cylinder.

3,690,796

APPARATUS FOR VULCANIZING ELASTOMERIC HOSE

Herbert H. Borsvold, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Aug. 21, 1970, Ser. No. 65,776
Int. Cl. F27b *7/20, 9/28;* B29h *7/14*
U.S. Cl. 425—90 4 Claims



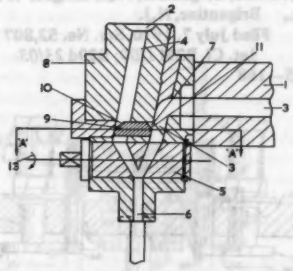
An elastomeric hose is encased in a lead sheath and continuously wound in a coil over a drum rotating about a vertical axis, heated to vulcanizing temperature while thereon and leaves the drum in the cured state. The cured hose leaves the drum continuously at a level lower than that at which it enters whereby the lead covered coil drops one pitch with each revolution of the drum such that the position of the hose coil on the drum remains substantially fixed.

3,690,797

INJECTION MOULDING MACHINES

Paul Johnson Garner, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Feb. 2, 1970, Ser. No. 7,865
Claims priority, application Great Britain, Feb. 18, 1969, 8,714/69
Int. Cl. B29f *1/03*
U.S. Cl. 425—146 6 Claims



Providing a valve in a "two-shot" injection moulding machine which consists of a shuttle which can slide across the paths of polymer flow to block one while allowing polymer to flow along the other, the position of the shuttle being controlled by the relative pressures in the two polymer streams.

3,690,798

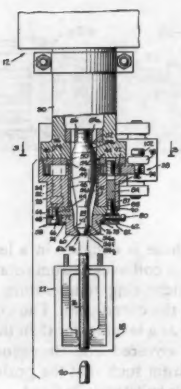
EXTRUDER HEAD

Anthony Raspante, Centerville, Mass., assignor to Packaging Industries, Inc., Hyannis, Mass.

Continuation of Ser. No. 841,816, July 15, 1969. This application Oct. 24, 1969, Ser. No. 869,142

Int. Cl. B29d *23/04*

U.S. Cl. 425—167 17 Claims



A variable orifice extruder head for extruding parisons whose wall thickness may be varied over the length of the parison. The extruder head comprises a die assembly movable with respect to a fixed mandrel for varying the die assembly orifice. The die assembly is supported by suspension rods from a fixed housing through which the mandrel passes and in relation to which the mandrel is also fixed. The suspension rods are threaded at their upper ends and have spur gears threaded thereon. An internal ring gear engages each of the spur gears in such manner that rotation of the ring gear causes rotation of the spur gears thereby to raise or lower the die assembly.

3,690,799

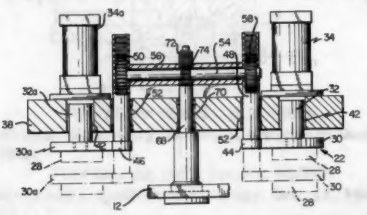
MULTIPLE INJECTION BLOW MOLDING MACHINE

Joseph A. Johnson, Brigantine, N.J., assignor to Jomar Industries, Inc., Brigantine, N.J.

Filed July 7, 1970, Ser. No. 52,807

Int. Cl. B29f *1/00*; B29d *23/03*

U.S. Cl. 425—168 17 Claims



An injection blow molding machine for automatically forming hollow articles of plastic material has a horizontally disposed rotatable and elevatable turret having distinct sets of hollow parison pins projecting from its six side faces and surrounded by 60° angularly spaced apart operating stations. The turret is indexed first 120° clockwise from an opposing pair of parison mold stations and then two cycles of 60° counterclockwise to an opposing pair of blow mold stations and to an opposing pair of ejection stations to cause the pins to successively operatively occupy such stations. Hydraulically actuated rams for the parison clamps at the parison mold stations and the shaft for the turret are linked together by a rack and pinion arrangement so that the synchronously operating rams lift the turret one half the distance of the movable mold halves whereby the pins clear the separated parison and blow mold halves as the turret is indexed. The hollow pins carry operating stems for the valves on the outer ends thereof with the turret ends of the pins having pressurized air inlets for air to act on the valve stems and to flow through the pins in the expansion of the parisons at the blow mold stations and the cooling of the blown articles at the ejection stations where the articles are mechanically stripped from the pins.

3,690,800

INJECTION MOULD HAVING A CLOSURE IN THE INJECTION CHANNEL PARTICULARLY FOR MOULDED SHAPES OF POLYURETHANE

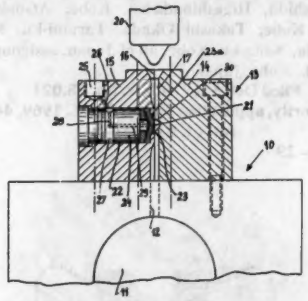
Johann Schwab, Vienna, and Wladimir Hascic, Maria-Enzersdorf, both of Austria, assignors to Semperit Osterreichisch-Amerikanische Gummiwerke Aktiengesellschaft, Vienna, Austria

Filed March 5, 1970, Ser. No. 16,877

Claims priority, application Austria, March 6, 1969, A 2248/69; July 22, 1969, A 7023/69

Int. Cl. B29f *1/00*

U.S. Cl. 425—192 11 Claims



An injection mould is disclosed for the manufacture of moulded shapes from an injectable material, with a device for closing the injection channel by means of an elastic deformable body, particularly in the processing of foamable synthetic materials. The closing device comprises a diaphragm-type sealing disk, particularly of silicone, which is housed in a cross-bore and held therein by an insert. The diaphragm can be operated approximately perpendicularly to the injection channel by compressed air or by a piston and is substantially arranged in a plane parallel to the axis of the injection channel.

3,690,801

DISCHARGE DEVICE FOR PLATEN PRESS

Gerhard Hutz, Suchteln, and Karl Muller, St. Tonis, both of Germany, assignors to G. Siempelkamp & Co., Krefeld, Germany

Filed July 10, 1970, Ser. No. 53,793

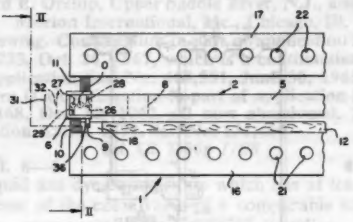
Claims priority, application Germany, July 15, 1969, P 19 35 887.3

Int. Cl. B29j *5/08*; B30b *5/00*

U.S. Cl. 425—229 13 Claims

A horizontal frame, riding on fixed rails, can be slid into the gap between two separated press plates for removing a freshly pressed board with the aid of an extractor bar dropped behind

the far edge of the board by the turning of a rotatable frame member. Two sets of bristles on the rotatable frame member come at the same time into contact with the upper and lower



press plates to sweep their confronting surfaces upon the withdrawal of the frame. Retractable extensions at the ends of the extractor bar may serve for the withdrawal of spacing strips together with the board.

3,690,802

APPARATUS FOR THE MANUFACTURE OF HOLLOW OBJECTS, IN PARTICULAR BOTTLES OF THERMOPLASTIC MATERIAL UTILIZING INJECTION BLOWING METHOD

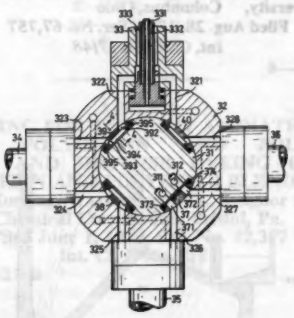
Stefan Fischer, Im Korresgarten 21, Lohmar, Bezirk Cologne, Germany

Filed Aug. 26, 1970, Ser. No. 67,090

Claims priority, application Germany, Aug. 29, 1969, P 19 43 873.4; June 26, 1970, P 20 31 585.9; July 23, 1970, P 20 36 523.5

Int. Cl. B29d *23/03*

U.S. Cl. 425—326 **18 Claims**



An apparatus for the production of hollow articles, such as bottles, from thermoplastic synthetic plastic material by the injection and blowing process, having an extruder, an injection mould, a blowing mould arranged at a distance therefrom and a transport or transmission device which bring the premouldings formed in said injection mould into said blowing mould after removal from said injection mould. The apparatus includes several intermittently advanceable blowing mandrels formed as mould cores for the injection mould, which are provided with supply conduits for a heating or cooling medium as well as a blowing air supply conduit, the cooling or heating medium throughflow conduits of all blowing mandrels are connected one behind the other and the cooling or heating medium flows successively through all blowing mandrels.

3,690,803

APPARATUS FOR CLOSING A FILLED SYNTHETIC MATERIAL CONTAINER

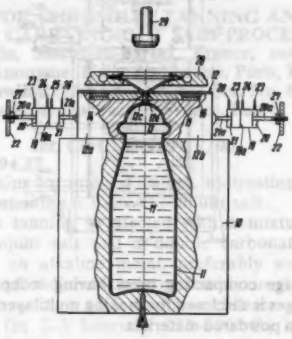
Heinz Pechtold, Walldurn Odenwald, and Gerhard Gold, Moglingen, both of Germany, assignors to PMD Entwicklungswerk fur Kunststoffmaschinen GmbH & Co., KG Ettilingen Baden, Germany

Filed June 22, 1970, Ser. No. 48,376

Claims priority, application Germany, June 23, 1969, P 19 31 710.3

Int. Cl. B29c *17/07*

U.S. Cl. 425—326 **3 Claims**



A method of and an apparatus for closing a filled container of synthetic material, which comprises the steps of producing a forming piece in its formable state, widened under pressure and filled, to the container, then the upper container section is formed to a head by means of a head mold with pinge edges in its closing position. An additional pressure medium is fed into the container, in order to create a predetermined pressure above atmospheric pressure in the container between the pressure filling step and the airtight closing of the container.

3,690,804

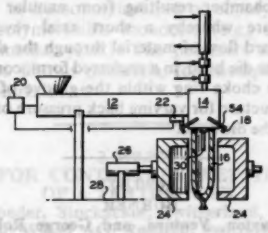
RETRACTABLE BLOW PIN FOR USE WITH PREPINCHED PARISONS

Thomas J. Nave, Bartlesville, Okla., assignor to Phillips Petroleum Company

Division of Ser. No. 840,744, July 10, 1969, Pat. No. 3,584,091. This application Jan. 8, 1971, Ser. No. 104,980

Int. Cl. B29d *23/03*

U.S. Cl. 425—326 **1 Claim**



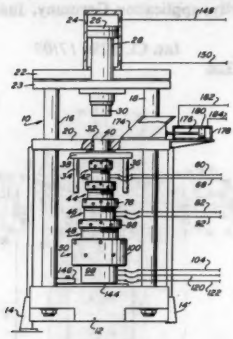
In the extrusion of thermoplastic parisons, a retractable blow pin and prepinching members are provided. The blow pin is retracted to allow the prepinching members to seal off the parison at a point adjacent the die face. Preblow fluid is introduced and the blow pin extended to allow the mold to close on it. The preblow fluid is preferably programmed to allow higher introduction pressure as the parison nears its full drop.

3,690,805

MULTIPLE FILL COMPACTING PRESS

Walter J. Kopicko, Wilmington, Del., assignor to Baldwin-Hamilton Company, Wilmington, Del.

Filed Nov. 16, 1970, Ser. No. 89,786
Int. Cl. B30b 11/02
U.S. Cl. 425—352 15 Claims



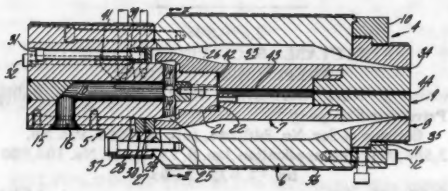
A five-stage compacting press having independently adjustable stages is disclosed for making multilayered laminated objects from powdered materials.

3,690,806

EXTRUSION DIE HEAD WITH REVERSED-FLOW AND ADJUSTABLE-CHOKE STRUCTURE

Lloyd Kovacs, Somerset, N.J., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Oct. 15, 1970, Ser. No. 80,977
Int. Cl. B29f 3/01
U.S. Cl. 425—467 4 Claims



A die head especially suitable in producing blown film and pipe wherein the parts are internally shaped to define a circular manifold chamber resulting from annular tongue-and-groove structure whereby a short axial reversal in the generally forward flow of material through the die head may be effected. The die head, in a preferred form, contains an axially adjustable choke ring within the groove of the tongue-and-groove structure for varying back pressure on the material supplied to the die head.

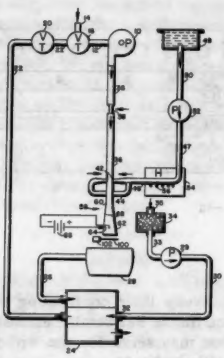
3,690,807

BURNER

Douglas R. Paxton, Ventura, and George Robert Talbott, Orange, both of Calif., assignors to Paxve, Inc.

Filed Nov. 16, 1970, Ser. No. 89,570
Int. Cl. F23c 3/02
U.S. Cl. 431—1 24 Claims

A burner and process which carries the burning of a hydrocarbon by a chain reaction to a point of substantial completion wherein relatively few parts of unreacted hydrocarbon remain. The burner and process comprise the introduction of air and a hydrocarbon into an elongated conically terminating chamber sized or affected so that the driving frequency of the chemical reaction of the hydrocarbon is matched to the resonant frequency of the chamber which serves to provide an increased dwell time and mixing of the molecules of the hydrocarbon to permit them to more fully react.

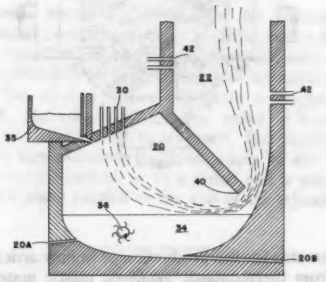


3,690,808

METHOD AND APPARATUS FOR SULFUR DIOXIDE EMISSION CONTROL IN COMBUSTION SYSTEMS

George R. St. Pierre, Worthington, Ohio, assignor to The Ohio State University, Columbus, Ohio

Filed Aug. 28, 1970, Ser. No. 67,757
Int. Cl. C01b 17/48
U.S. Cl. 431—4 16 Claims



A method and apparatus for burning fossil fuels containing a significant sulfur content which removes a significant portion of the sulfur oxides released to the atmosphere. The invention is characterized by the dispersal of a molten metal into a combustion chamber for intimate contact with the combustion products to combine with the sulfur compounds produced by the combustion reaction. The metal sulphide may then be collected and refined for recirculation and the sulfur dioxides collected for use or sale.

CHEMICAL

3,690,809
LIQUID AZO DYE COMPOSITION AND PROCESS THEREFOR

Richard B. Orelup, Upper Saddle River, N.J., assignor to Morton International, Inc., Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 677,733, Oct. 24, 1967, which is a continuation-in-part of application Ser. No. 468,551, June 30, 1965, which in turn is a continuation-in-part of application Ser. No. 230,268, Oct. 12, 1962, all now abandoned. This application Apr. 5, 1971, Ser. No. 131,409

Int. Cl. D06p *1/08*

U.S. Cl. 8—6 **4 Claims**

A liquid azo dye composition which has at least about 40 percent of the color value of a comparable solid dye, exhibits permanent homogeneous liquidity, and is capable of complete and instantaneous solubility in petroleum distillates. The dye composition consists essentially of between about 50–75% by weight of a mixture of azo dyes containing C_5–C_{12} alkyl-beta-naphthols or p–C_5-C_{12} alkyl phenol in the dye molecule and about between 50–25% by weight of a liquid organic viscosity depressant compatible with the azo dyes.

3,690,810
BENZOMORPHOLINE COUPLERS AND OXIDATION BASES FOR DYEING LIVE HUMAN HAIR

Andree Bugaut, Boulogne-sur-Seine, and Francoise Estradier, Paris, France, assignors to Societe Anonyme dite L'Oreal, Paris, France

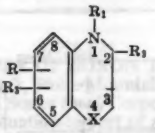
No Drawing. Filed Aug. 4, 1969, Ser. No. 847,413

Claims priority, application Luxembourg, Aug. 13, 1968, 56,703

Int. Cl. A01k *7/12*

U.S. Cl. 8—10.2 **4 Claims**

Oxidation dye coupling compounds for use in dyeing live human hair having the formula:



(I)

3,690,811
ACID DYEING FOR TERTIARY AMINATED POLYAMIDE, POLYOLEFIN AND POLYAMIDE BLENDS AND DISPERSE DYEING OF SAID POLYOLEFIN AND POLYESTER BLENDS

Kermit G. Horning, Waynesboro, Va., assignor to Thiokol Chemical Corporation, Bristol, Pa.

Filed June 1, 1970, Ser. No. 42,357

Int. Cl. D06p *3/82*

U.S. Cl. 8—21 B **14 Claims**

A union dyed, solid colored, tufted carpeting, uniformly shaded in both the face yarns and in the backing material, comprises as the backing material woven ribbons of a composition comprising a polyolefin blended with a basic polyamide dye site additive, said additive consisting of a minor incorporated amount of a polyamide resin based on a linear aliphatic dicarboxylic acid and a polyamine containing two primary or secondary amine groups and at least one tertiary amine group.

3,690,812
PROCESS FOR CHROMIUM TANNING AND BATH FOR CARRYING OUT SAID PROCESS

André Klein, Marcq-en-Bareul, France, assignor to Societe Anonyme: Ugine Kuhlmann, Paris, France

No Drawing. Filed Feb. 3, 1970, Ser. No. 8,431

Claims priority, application France, Feb. 5, 1969, 6902541

Int. Cl. C14c *3/04, 3/06*

U.S. Cl. 8—94.27 **7 Claims**

Tanning skins for making leather, by treating the skins in a bath containing a basic chromium salt.

Chromium tanning is effected with a mixture of trivalent chromium salt and a double carbonate of aluminium and an alkaline metal, preferably sodium. An aluminium and sodium salt is preferably used, obtained by thermal treatment of a double carbonate aluminium and sodium for 2–3 hours at 250–300° C., having the following basic formula, the percentages being expressed by weight:

	Percent
Al_2O_3	30–50
CO_2	10–25
Na_2O	10–20

This process providing high quality tanned animal skins.

3,690,813
PROCESS OF REACTING HYDROGEN-DONOR FIBROUS SUBSTRATE WITH POLYMERS OF ACRYLOXYACYL CHLORIDES AND PRODUCTS PRODUCED THEREBY

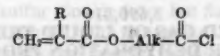
Martin J. Diamond, 6131 Hillegass Ave., Oakland, Calif. 94618, and Howard L. Needles, Davis, Calif. 95616

No Drawing. Filed Mar. 20, 1970, Ser. No. 21,499

Int. Cl. D06m *13/20*

U.S. Cl. 8—115.5 **14 Claims**

Acryloxyacyl chlorides of the structure



wherein R is H or CH_3 and Alk is a bivalent hydrocarbon radical containing 1 to 21 carbon atoms. These compounds may be homopolymerized or copolymerized with a different polymerizable monomer (e.g., a lower alkyl acrylate or methacrylate). The polymers are useful for application to fibrous materials, for example, to wool to make it shrink resistant.

3,690,814
METHOD FOR CONTINUOUS WET TREATMENT OF A TEXTILE WEB

Peter Schroeder, Stockacker, Switzerland, assignor to Paul Weber AG, Rothrist, Switzerland

Filed Feb. 26, 1970, Ser. No. 14,361

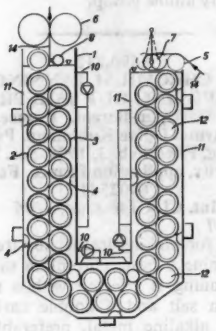
Claims priority, application Switzerland, Feb. 28, 1969, 3,017/69

Int. Cl. B05c *3/136*

U.S. Cl. 8—151 **4 Claims**

In a method for the continous wet treatment of a textile web guided along a zig-zag path in a bath formed by a continuous counter-current of flowing treatment liquid, the

web is positively guided along its path of movement through the bath while being supported in a substantially uninterrupted manner along this path. To effect simultaneous boundary layer exchange on both surfaces, the both surfaces of the web are alternately compressed and stretched. The web is guided over perforated rollers and, with respect to the majority of these rollers, the web has



a looping angle therearound in excess of 180°. The perforated rollers are arranged so close to each other that, although they do not touch, they form practically an uninterrupted support for the web. At least one wide-slot nozzle directs treatment liquid directly against the textile web in the bath. Preferably, the rollers have displacement inserts therein to fill a substantial part of the interior of the rollers.

3,690,815

DYEING ASSISTED BY ARYL ESTERS OF ARYL SULFONIC ACIDS

Kurt A. Dellian, Spring Valley, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Mar. 31, 1971, Ser. No. 130,026
Int. Cl. D06p *5/04*
U.S. Cl. 8—173 **9 Claims**

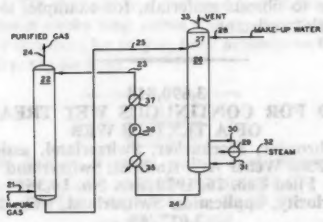
A technique is disclosed for coloring hydrophobic textile fibers with a disperse, essentially water insoluble, dyestuff in combination with an arylsulfonic ester carrier.

3,690,816

SIMPLIFIED GAS OR LIQUID TREATING AND/OR DEHYDRATION PROCESS

Carl E. Alleman, % Phillips Petroleum Co., Bartlesville, Okla. 74003

Filed Feb. 24, 1970, Ser. No. 13,681
Int. Cl. B01d *47/00;* **C10g** *29/20*
U.S. Cl. 423—228 **4 Claims**



The removal of impurities such as hydrogen sulfide, carbon dioxide, and water from a gas or liquid such as natural gas or a hydrocarbon, is accomplished by treating the gas or liquid with an absorbent liquid or reagent in a treater or an absorber, obtaining a purified gas or liquid and an enriched absorbent liquid or reagent. The absorbent liquid is passed without prior essential heating directly to the top of a stripper or regenerator wherein impurities are released with the aid of heat. Heat is supplied, for example, by reboiling the absorbent liquid in the stripper or the regenerator. The enriched liquid acts in the stripper or regenerator to condense vaporized absorbent or reagent liquid which normally would pass therefrom then to be condensed and later returned. Hot, lean absorbent liquid or reagent recovered from the stripper or regenerator is cooled by external cooling media and returned to the treatment. This cooling is the sole essential cooling of the liquid absorbent or reagent in the overall operation. In many cases this cooling is the sole essential cooling in the overall operation.

3,690,817

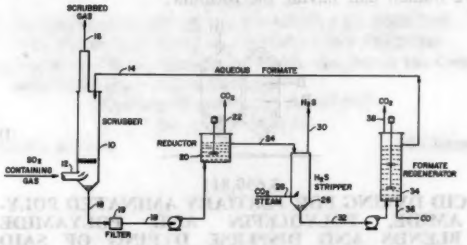
Patent Not Issued For This Number

3,690,818

CYCLIC PROCESS FOR REMOVAL OF SO_2 FROM FLUE GAS

Everett Gorin, Pittsburgh, and Paul M. Yavorsky, Monongahela, Pa., assignors to Consolidation Coal Co., Pittsburgh, Pa.

Continuation-in-part of applications Ser. No. 879,223 and Ser. No. 879,224, both Nov. 24, 1967, which are continuations-in-part of application Ser. No. 667,479, Sept. 13, 1967. This application Mar. 29, 1971, Ser. No. 128,782
Int. Cl. B01d *53/34;* **C01b** *17/64;* **C07c** *53/06*
U.S. Cl. 423—243 **5 Claims**



A cyclic process including absorption of SO_2 from a flue gas by means of an absorbent containing potassium formate, sodium formate, or ammonium formate at a temperature above 140° F., and regeneration of the spent absorbent by treatment with selected reducing agents, specifically, potassium formate, sodium formate or ammonium formate, and carbon monoxide at a temperature above 475° F., either concurrently or sequentially.

3,690,819

PROCESS FOR THE PREPARATION OF POTASSIUM NITRATE

Giacinto Veronica, 7 Via Dolores Bello, Novara, Italy

Filed June 1, 1970, Ser. No. 42,135
Claims priority, application Italy, May 22, 1969, 17,178/69
Int. Cl. C01b *21/48*
U.S. Cl. 423—397 **6 Claims**

Process for making KNO_3 from KCl and $Ca(NO_3)_2$ salts, these salts being reacted in the presence of a

recycle solution to form solid KNO_3, the recycle solution containing Ca^+, K^+, NO_3^-, and Cl^- ions, separating the solid KNO_3 at a temperature from about -10 to $+20°$ C., and treating the mother liquor from which the KNO_3 has been precipitated with lime to thereby precipitate calcium oxychloride, $CaCl_2 \cdot 3CaO \cdot 16H_2O$, to thereby reduce the calcium chloride content of the mother liquor. Improvement comprises effecting the precipitation of calcium oxychloride in the presence of a solid phase made up substantially of calcium oxychloride and not more than 5% by weight of free lime at a temperature that is from from about 5 to 15° higher than the temperature of separation of the KNO_3, and maintaining the concentration of chloride ions of the liquid phase within ± 5 grams per liter of the saturation concentration.

3,690,820

PRODUCTION OF AMMONIUM NITRATE

Daniel J. Newman, Jackson Heights, N.Y., and Rolf Falck-Muus, Closter, N.J., assignors to Chemical Construction Corporation, New York, N.Y.

Filed June 13, 1969, Ser. No. 832,932
Int. Cl. C01c *1/18*
U.S. Cl. 423—396 6 Claims

An improvement in the production of solid chemicals such as ammonium nitrate is provided, for processes in which a vapor containing liquid droplets is evolved during formation or concentration of a liquid solution containing dissolved solid chemical. The vapor is cooled and condensed, and the resulting liquid condensate is employed to scrub a gas stream laden with entrained solid or liquid chemical particles, which is formed during processing of the liquid solution with gas to form solid chemical. The scrubbing step produces liquid solution containing dissolved solid chemical which is economically concentrated and recycled.

3,690,821

MANUFACTURE OF BORON TRIFLUORIDE

Robert A. Wiesboeck, Stone Mountain, Ga., assignor to United States Steel Corporation

No Drawing. Continuation-in-part of application Ser. No. 848,116, Aug. 6, 1969, which is a continuation-in-part of abandoned application Ser. No. 666,514, Sept. 8, 1967. This application Mar. 23, 1971, Ser. No. 127,334
Int. Cl. C01b *35/00*
U.S. Cl. 423—293 7 Claims

An anhydrous oxo-salt of boron or boric oxide is mixed with an alkali or alkaline earth fluorosulfonate and heated, preferably in the range of about 100–200° C. to evolve boron trifluoride which is recovered as product.

3,690,822

HIGHLY SILICEOUS SOLID SODIUM SILICATE

Clyde B. Myers, 7744 Fairlawn Drive, Mentor, Ohio 44060

No Drawing. Continuation-in-part of abandoned application Ser. No. 738,771, June 21, 1968. This application Dec. 21, 1970, Ser. No. 100,444
Int. Cl. C01b *33/32*
U.S. Cl. 423—334 5 Claims

A process is described for preparing a solid sodium silicate having a SiO_2:Na_2O weight ratio from about 4.0:1–5.3:1 by the direct reaction of a mixture of 40–60 percent water, a soluble sodium silicate having a ratio of less than 4.0:1 and an amorphous finely-divided silica, the amount of silica being sufficient to yield, in combination with the sodium silicate, the desired final weight ratio. Reaction takes place at a temperature less than that at which intumescence occurs. The water-soluble, high water content, solid product so obtained is also described.

3,690,823

MANUFACTURE OF SILICA-RICH ZEOLITES

Dean Arthur Young, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Continuation-in-part of application Ser. No. 516,662, Dec. 27, 1965. This application Apr. 16, 1969, Ser. No. 816,810
Int. Cl. C01b *33/28*
U.S. Cl. 423—338 19 Claims

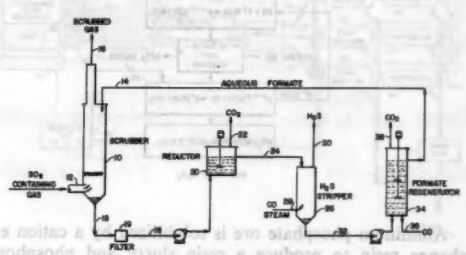
Zeolites of the Y crystal type are produced by digesting an aqueous reaction mixture comprising silica gel synerized at a pH between about 5.5 and 10, preferably between about 6 and 9, and sodium aluminate at an elevated temperature. The particular silica gel employed permits the production of good yields of Y-type zeolites having a silica to alumina mole ratio of above 3.9 under mildly alkaline conditions heretofore considered possible only in conjunction with silica hydrosols and reactive amorphous solid silicas.

3,690,824

DESULFURIZATION OF FLUE GAS

Everett Gorin, Pittsburgh, and Paul M. Yavorsky, Monongahela, Pa., assignors to Consolidation Coal Company, Pittsburgh, Pa.

Application Nov. 24, 1969, Ser. No. 879,223, which is a continuation-in-part of application Ser. No. 667,479, Sept. 13, 1967. Divided and this application Mar. 29, 1971, Ser. No. 128,783
Int. Cl. B01d *53/34;* C01b *17/64;* C07c *53/06*
U.S. Cl. 423—243 5 Claims



Removal of sulfur dioxide from hot flue gas by passing the flue gas in contact with potassium formate, sodium formate, or ammonium formate, in either a molten state or in an aqueous solution, at a temperature above 140° F., whereby the sulfur dioxide and the formate react to form principally thiosulfate.

3,690,825

PROCESS FOR THE PREPARATION OF GLOBULAR SODIUM BISULFATE

Reuben C. Ott, Bay Village, Ohio, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 671,603, Sept. 29, 1967. This application Oct. 30, 1970, Ser. No. 85,740
Int. Cl. C01d *5/02*
U.S. Cl. 423—264 5 Claims

Precipitation of iron salts in molten sodium bisulfate is prevented by the steps of adding water to a molten sodium bisulfate process stream, thereby cooling this molten sodium bisulfate process stream to a temperature below 500° F. but maintaining it above the crystallization temperature of the sodium bisulfate, contacting the cooled sodium bisulfate-water mixtures with metallic zinc, and then spray-forming the mixture into globules.

3,690,826

PROCESS FOR THE PRODUCTION OF PHOSPHORIC ACID BY THE WET METHOD

Albert Leon Lucien Husken, 17 Rue de la Liberte, Bondy, Seine-Saint Denis, France

Continuation-in-part of application Ser. No. 524,240, Feb. 1, 1966. This application Dec. 23, 1969, Ser. No. 887,764

Claims priority, application France, Feb. 2, 1965, 4,160; Sept. 3, 1965, 30,372

Int. Cl. C01f *11/46;* C01b *25/22*

U.S. Cl. 423—320 6 Claims

The invention relates to a process for the production of phosphoric acid by the wet method in which crushed natural phosphate and concentrated sulfuric acid are added to a phosphoric acid slurry circulating in a closed circuit. A predetermined end product can be obtained by controlling the temperature and rate of flow of the ripening slurry through the circuit.

3,690,827

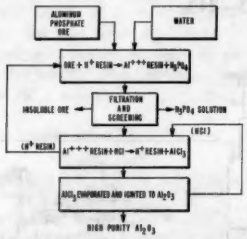
ION EXCHANGE PROCESS FOR ALUMINUM VALUES

Donald E. Garrett, 505 W. 9th St., Claremont, Calif. 91711

Filed June 4, 1970, Ser. No. 43,379

Int. Cl. C01f *7/02;* C01b *25/18;* C01g *49/02*

U.S. Cl. 423—112 3 Claims



Aluminum phosphate ore is solubilized by a cation exchange resin to produce a resin slurry and phosphoric acid filtrate. The resin is treated with HCl to regenerate the resin and produce an aluminum chloride solution which is then evaporated and hydrolized to aluminum oxide with the evolved HCl being recycled to the resin regeneration step. When iron is present, the iron is separated from the chloride solution by the addition of alumina to adjust the pH of the solution to a value of from about 2 to 2.5. This causes the iron to precipitate as ferric hydroxide.

3,690,828

ORE EXTRACTION

Herbert Barclay Baetz, Kingston, Jamaica (1211 W. Bay Ave., Newport Beach, Calif. 92660), and Robert C. Lightbourne, 5 S. Race Course, P.O. Box 496, Kingston, Jamaica

Filed Feb. 5, 1970, Ser. No. 9,015

Claims priority, application Great Britain, Feb. 6, 1969, 6,494/69

Int. Cl. C01g *23/00, 49/00*

U.S. Cl. 423—149 9 Claims

A method of extracting a metal forming a volatile chloride, such as iron and/or titanium, from a material, such as bauxite or a high silica bauxite. The material is reacted with a hot gaseous mixture of sulphur dioxide and chlorine above the vaporisation temperature of the metal chloride produced during the reaction and the gaseous products of the reaction separated from the solid residue. The metal chloride is then isolated from the other gaseous reaction products.

3,690,829

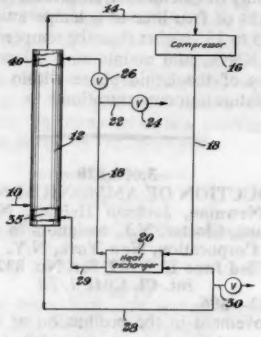
DEUTERIUM SULFIDE SEPARATION AND ITS CONVERSION TO DEUTERIUM OXIDE

David N. Glew and Ewart C. Clarke, Sarnia, Ontario, Canada, assignors to The Dow Chemical Company, Midland, Mich.

Filed May 22, 1970, Ser. No. 39,594

Int. Cl. C01b *5/02, 17/16;* F25j *3/00*

U.S. Cl. 423—561 8 Claims



Disclosed herein is a process for concentrating deuterium values. Specifically, the process comprises distilling a liquid mixture of hydrogen sulfide and deuterium sulfides at a temperature of from about minus 45° C. to about 100° C. The gaseous distillate is enriched with respect to the deuterium sulfides. Ultimately the enriched distillate can be processed to convert the deuterium sulfides to deuterium oxides suitable for use as moderators in nuclear reactors.

3,690,830

ISOTOPE SEPARATION WITH HEAT BALANCING

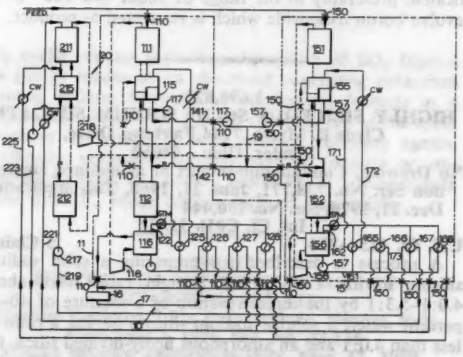
Don Barkley Nazzer, Port Hawkesbury, Nova Scotia, Canada, assignor to Canadian General Electric Company, Limited, Toronto, Ontario, Canada

Filed Oct. 27, 1969, Ser. No. 869,689

Claims priority, application Canada, Nov. 30, 1968, 36,564

Int. Cl. C01b *5/02;* B01j *1/00*

U.S. Cl. 423—580 9 Claims



The heat exchange provisions for a heavy water separation plant first stage having a plurality of parallel flow sub-stages permits selective isolation of one of the

sub-stages from the plant, with the provision of thermal compensation to the plant to maintain thermal balance of the process.

3,690,831
METHOD OF PREPARING CARBON BLACK OF LARGE PARTICLE SIZE AND LOW STRUCTURE

Wagi Kobayashi and Fumitugu Narisawa, Niigata, Japan, assignors to Asahi Carbon Co., Niigata-ken, Japan

Filed Feb. 19, 1970, Ser. No. 12,755
Claims priority, application Japan, Sept. 25, 1969, 44/76,381
Int. Cl. C09c *1/48*
U.S. Cl. 423—449 **7 Claims**

A method of preparing carbon black of large particle size and low (less linked) structure comprising the steps of: jetting the feed oil together with the primary air into the reaction chamber from one end of a cylindrical furnace to opposite end thereof; simultaneously introducing the secondary air from a plurality of air orifices into said reaction chamber tangentially along the circular inner-wall thereof; and combusting incompletely said feed oil; wherein the angle of said jetting is regulated and the secondary air streams are introduced in the same tangential directions or in opposed tangential directions at the specifically located air orifices.

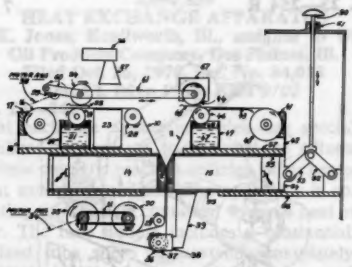
ERRATA

For Classes 8—6 thru 8—173 see:
Patents Nos. 3,690,809 thru 3,690,815

3,690,832
LUMINESCENCE DETECTION BY SURFACE REACTION

Chris J. Plakas, Champaign, Ill., assignor to Vitalect Corporation, Arlington, Va.

Filed Apr. 17, 1970, Ser. No. 29,475
Int. Cl. G01n *21/30, 33/16*
U.S. Cl. 23—230 B **15 Claims**

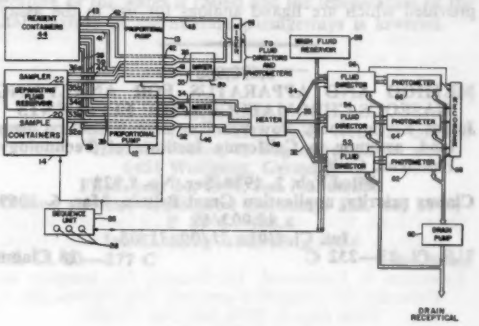


A system for testing a sample by means of bioluminescent or chemiluminescent reaction or scintillation fluorescence to detect living material or radioactive tracers therein. Bioluminescent and chemiluminescent reaction is achieved by bringing into contact between two photodetectors two light transparent surfaces, one of which carries the sample at spaced intervals and the other the reagent at similar intervals. Light emitted due to the reaction of the sample and reagent on the interface of the surfaces is transmitted through optical coupling liquid and light pipes to photocathodes of the photodetectors. Scintillation fluorescence is achieved in a similar manner but with one surface carrying sample containing a tracer and the other surface made of scintillation material. For special individual experiments involving extremely small quantities of sample the surfaces may be two microscope cover plates bearing the sample and reagent. The output signals of the photodetectors are transmitted through amplifiers and coincidence circuitry into a scaler or display unit, thus accurately recording the number of reactions of individual cells or their extract, the number of disintegrated particles, or the total energy of reaction. The entire system is ambient light tight for protection and greater efficiency in detecting low levels of luminescence.

3,690,833
AUTOMATED FLUIDS ANALYZER HAVING SELECTIVELY INTERRUPTED FLOW

Andres Ferrari, Dover, Mass., assignor to Damon Corporation, Needham Heights, Mass.

Filed May 4, 1970, Ser. No. 34,104
Int. Cl. G01n *21/16, 33/16*
U.S. Cl. 23—230 R **28 Claims**



An automatic chemical analyzer of the concentrations of different constituents in minute samples of fluid moves a sample along a processing path with discontinuous flow such that the sample dwells essentially stationary in the analyzer for a portion of the analysis time. A fluid directing mechanism delivers the central portion of the processed sample to a photometer for measurement, and removes the rest of the processed sample, with whatever other fluids are present, from the processing path. Fresh wash liquid is flushed through the photometer to cleanse it between samples, which can be held stationary during measurement.

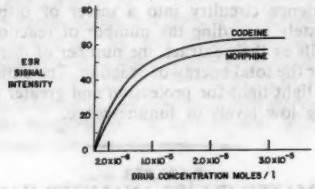
3,690,834
LIGAND DETERMINATION WITH SPIN LABELED COMPOUNDS BY RECEPTOR DISPLACEMENT

Avram Goldstein, Stanford, Richard K. Leute, Sunnyvale, and Edwin F. Ullman, Atherton, Calif., assignors to Syva Company

Continuation-in-part of application Ser. No. 105,535, Jan. 11, 1971. This application May 10, 1971, Ser. No. 141,516
Int. Cl. G01n *27/78, 33/16*
U.S. Cl. 23—230 R **42 Claims**

Organic compounds of biological interest can be determined at extremely low concentrations by combining in a medium, the composition to be determined, hereinafter referred to as ligand, a high molecular weight material of at least 10,000 molecular weight, which has a

site spatially characteristic of the ligand, hereinafter referred to as receptor, and an analog of the ligand having a free radical functionality, hereinafter referred to as "ligand analog." The ligand analog and ligand in the medium compete for the receptor site, the amount of ligand analog bound to the receptor, being dependent on



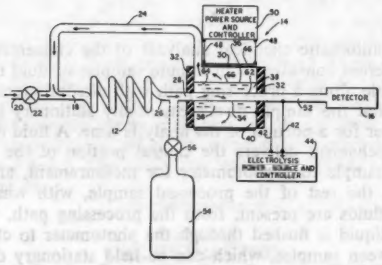
the amount of ligand present in the medium. By following the change in electron spin resonance spectrum of the ligand analog and comparing it to the change in spectrum which would be obtained in the absence of any ligand, the amount of ligand can be determined. Compounds are provided which are ligand analogs for use in the assay.

3,690,835

METHOD AND APPARATUS FOR ANALYZING GASEOUS CHROMATOGRAPHIC EFFLUENTS

James E. Lovelock, Bowerchalke, near Salisbury, England, assignor to California Institute of Technology, Pasadena, Calif.

Filed Feb. 2, 1970, Ser. No. 7,922
Claims priority, application Great Britain, Mar. 6, 1969, 12,003/69
Int. Cl. G01n *31/00, 31/08*
U.S. Cl. 23—232 C **18 Claims**



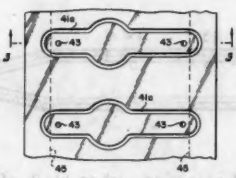
A combined hydrogen gas separator and generator device comprising a pair of thin palladium film membrane electrodes separated by an aqueous hydroxide electrolyte. On application of an electrolytic current to the films heated to a temperature of at least 150° C., hydrogen is selectively transferred through the first film, across the body of electrolyte as protonic hydrogen and is regenerated as diatomic hydrogen on the outside surface of the second film. The impurities in the hydrogen inlet stream collect at the outside surface of the first film. The concentrated impurities can be sent to a detector for analysis. The regenerated hydrogen can be recycled to operate a separator unit such as a gas chromatographic column.

3,690,836

DEVICE FOR USE IN THE STUDY OF CHEMICAL AND BIOLOGICAL REACTIONS AND METHOD OF MAKING SAME

Jean Buissiere, Villeurbanne, Louis Colobert, Collonges-au-Mont-d'Or, and Paul A. F. Montagnon, La Balmes-les-Grottes, France, assignors to Promoveo, Seyssinet, Isere, France

Continuation of abandoned application Ser. No. 618,942, Feb. 27, 1967. This application Nov. 12, 1970, Ser. No. 89,032
Claims priority, application France, Feb. 28, 1966, 47,000; Mar. 7, 1966, 47,031
Int. Cl. G01n *1/10, 21/06*
U.S. Cl. 23—253 TP **30 Claims**



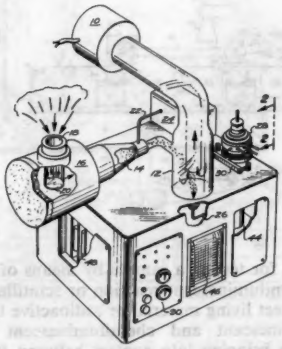
Devices for the study of chemical or biological reactions are provided by forming a sandwich of two plastic sheets having at least one sheet of porous water-absorbent material such as filter paper interposed therebetween. Upon compression of the sandwich, as between suitably designed heater electrodes, one or more chambers are formed, each chamber having a portion of the water-absorbent sheet positioned therein and having suitable apertures provided through which apertures chemicals, enzymes, and cell suspensions may be introduced for testing of the metabolic utilization of such chemicals by such enzymes or cells and observation of concomitant color reactions within said chambers.

3,690,837

AUTOMATIC BIOLOGICAL AGENT DETECTOR

Samuel Witz, Los Angeles, Calif., Lee T. Carleton, Northport, N.Y., Howard H. Anderson, Covina, and Rudolph H. Moyer, West Covina, Calif., and Harold A. Neufeld, Frederick, Md.; said Witz, Anderson, and Moyer assignors to Aerojet-General Corporation, El Monte, Calif., and said Neufeld assignor to the United States of America as represented by the Secretary of the Army

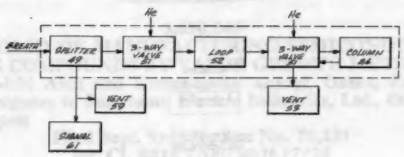
Filed July 6, 1970, Ser. No. 52,606
Int. Cl. G01n *21/26, 33/16*
U.S. Cl. 23—254 R **7 Claims**



Apparatus for detecting biological agents such as vegetative bacteria, spores and viruses, capable of operating satis-

factorily when supplied with minute samples of material to be tested, even when present in a continuous background of matter similar in nature. The equipment utilizes the phenomenon of chemiluminescence and, more particularly, provides the proper conditions for chemiluminescence of luminol by hydrogen peroxide, operating in an intermittent flow system supplied with the agents by an aerosol particle collector, and in which detection of the chemiluminescence is by a photomultiplier tube the output of which is monitored. Photomultiplier output could be recorded on a chart, magnetic tape or merely designed to set off an alarm when values exceed a prescribed threshold.

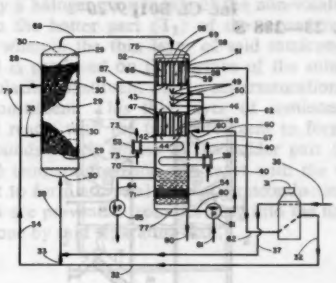
3,690,838
APPARATUS FOR UNIVERSAL BLOOD ALCOHOL DETERMINATION
Manley J. Luckey, 7252 Osbun Road, San Bernardino, Calif. 92404
Filed Oct. 19, 1970, Ser. No. 81,935
Int. Cl. G01n *1/22, 31/08, 33/16*
U.S. Cl. 23—254 R **9 Claims**



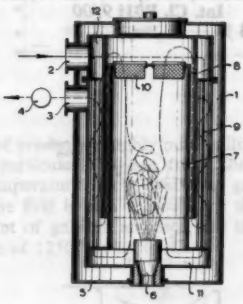
A gas chromatograph and method for determination of blood alcohol content from blood samples, urine samples, direct breath samples, or breath extraction samples. Blood or urine samples are analyzed directly in the gas chromatograph, which includes a sample-taking mechanism, including a storage loop for direct breath sampling, and includes an audible signal for assuring that the sample taken is of alveolar breath. A sample of alcohol extracted from breath is dissolved in water and a chromatographic analysis of alcohol vapor concentration in the air over the solution provides a measure of blood alcohol concentration.

3,690,839
HEAT EXCHANGE APPARATUS
Edwin K. Jones, Kenilworth, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Oct. 26, 1970, Ser. No. 84,012
Int. Cl. B01n *9/04;* **F28f** *9/02*
U.S. Cl. 23—260 **6 Claims**

A heat exchange apparatus which has special utility when utilized to separate water from the effluent of an endothermic catalytic reaction utilizing super heated steam as a heat exchange medium. The apparatus is comprised of a floating tube bundle contained within a heat exchange chamber. The tube bundle includes a substantially horizontal fixed tube sheet that extends completely across and is attached to the interior of heat exchange chamber, a substantially horizontal floating tube sheet spaced from the first tube sheet disposed across the heat exchanger, and a plurality of spaced apart vertical heat exchange tubes connected between the tube sheets, the interior of the heat exchange tubes communicating through the tube sheets. The interiors of the tubes establish a group of mixture passageways and the space around the tubes establishes a group of heat exchange passageways. A condenser is disposed downstream of the mixture passageways for condensing the vapor water in the mixture to liquid. A settling tank, located downstream of a condenser, is used for settling and separating the liquid water from the hydrocarbon. Water is carried to the heat exchange passageways of the tube bundle where it is placed in indirect heat exchange relationship with the total mixture and the temperature of the water is raised and the temperature of the total mixture in the mixture passageways is lowered.



3,690,840
APPARATUS FOR INCINERATING WASTE GASES
Herbert Volker, 43 Bogenstrasse, 6451 Wolfgang, Germany
Filed Aug. 24, 1970, Ser. No. 66,200
Claims priority, application Germany, Jan. 16, 1970, P 20 01 933.4
Int. Cl. F23g *7/06;* **B01g** *9/04*
U.S. Cl. 23—277 C **8 Claims**



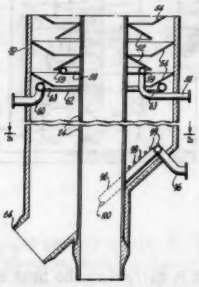
A cylindrical form thermal-catalytic incinerator unit for treating waste gas streams. The catalytic bed traverses the downstream end of the combustion chamber to effect contact with the mixture of waste gases and burner products from a burner axially positioned at the opposing inlet end of the combustion chamber. An annular heat exchange section around the combustion zone provides for cooling the resulting oxidized gas stream and for preheating the incoming noxious stream which is then fed circumferentially around the burner to admix with the flame and hot gases therefrom.

3,690,841

STEAM DISTRIBUTOR FOR FLUID CATALYTIC CRACKER STRIPPER

Dorrance P. Bunn, Jr., 5206 Grape Road, Houston, Tex. 77035, and Werner L. Hack, 20 Danzigerstr., 609 Russelsheim am Main, Germany

Filed Aug. 3, 1970, Ser. No. 60,585
Int. Cl. B01j 9/20
U.S. Cl. 23—288 S 3 Claims



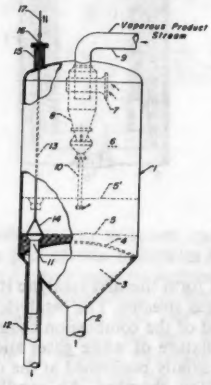
A steam distributor is located in the conic discharge section of an annular catalyst stripper in a fluid catalytic cracker unit upstream of the recycle feed riser entry to provide for improved flow control of the discharge of the spent catalyst and the additional stripping thereof.

3,690,842

REACTOR FOR FLUIDIZED PARTICLES WITH ADJUSTABLE LEVEL WEIR TO PARTICLE OUTLET

Lawrence S. Lockwood, La Grange, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Oct. 5, 1970, Ser. No. 77,824
Int. Cl. B01j 9/00
U.S. Cl. 23—288 S 5 Claims



A reactor chamber suitable for fluidized catalyst or other particulates which provides an adjustable height weir or opening to the particulate withdrawal means such as, for example, a vertically adjustable lift means connective with a slidable and open-topped conduit section as an upper part of the particulate withdrawal means from the chamber. Thus, varying levels of dense-phase particulate beds can be maintained in the chamber. The seal means around the lift means extending into the chamber for adjusting weir height is preferably provided at a zone that is somewhat removed from any high temperature areas within the chamber and away from the area of dense catalyst concentration.

3,690,843

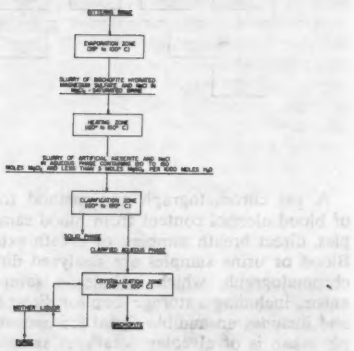
Patent Not Issued For This Number

3,690,844

RECOVERY OF SULFATE-FREE HYDRATED MAGNESIUM CHLORIDE FROM SULFATE-CONTAMINATED BRINES

Ulrich E. G. Neitzel and Hans Gerhard Flint, Ogden, Utah, assignors to Great Salt Lake Minerals and Chemicals Corporation, Ogden, Utah

Filed Oct. 17, 1969, Ser. No. 867,337
Int. Cl. C01f 5/30, 5/40; B01d 1/00
U.S. Cl. 23—296 9 Claims



Magnesium chloride brine contaminated with sulfate, sodium chloride, and other impurities is evaporated to produce a slurry of hydrated magnesium chloride, hydrated magnesium sulfate, and, in some instances, sodium chloride. The slurry is heated to a temperature at which the solubility of magnesium sulfate is very low and is held at that temperature sufficiently long to permit most of the dissolved sulfate to crystallize as artificial kieserite. Most or all of the magnesium chloride is redissolved at the elevated temperature. The aqueous phase of the slurry is recovered and cooled to produce substantially pure hydrated magnesium chloride, usually bischofite.

3,690,845

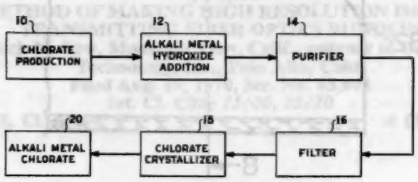
CRYSTALLIZATION OF A METAL CHLORATE FROM A CHLORATE-CHLORIDE CONTAINING SOLUTION

Morris P. Grotheer, Lewiston, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

Filed Dec. 22, 1969, Ser. No. 887,216
Int. Cl. C01b 11/14
U.S. Cl. 23—300 5 Claims

A process is provided for crystallizing an alkali metal chlorate from an aqueous solution containing an alkali metal chlorate and the same alkali metal chloride mixture,

which comprises introducing the same alkali metal hydroxide into said solution in an amount sufficient to depress the solubility of said alkali metal chlorate and cooling the solution from an initial temperature of from



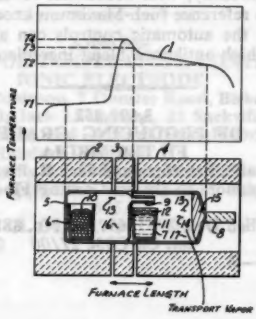
80–100° C. to an ultimate temperature of from 25 to 40° C. It has been found that in the presence of a common metal hydroxide, the solubility of an alkali metal chlorate is greatly reduced whereas the solubility of a common metal chloride is not greatly affected.

3,690,846

METHOD OF MANUFACTURING SEMICONDUCTING COMPOUNDS BY VAPOR GROWTH METHOD

Shin-ichi Akai and Katsunosuke Aoyagi, Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Sept. 9, 1970, Ser. No. 70,231
Int. Cl. B01d 7/00; B01j 17/28
U.S. Cl. 23—294 **6 Claims**



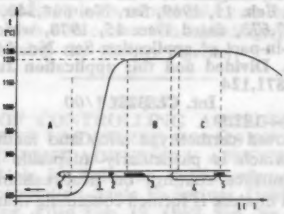
This invention relates to a method of manufacturing semiconducting compounds, particularly GaP, which has a high dissociation pressure (about 39 atm.) at its melting point (1465° C.), in the crystalline ingot form. The method is a new improvement of the vapor growth method, and comprises the step of making use of a crystal growing furnace having a low temperature zone (T_1), a maximum temperature zone (T_4) and a high temperature zone providing a temperature gradient (T_3–T_2), where $T_4>T_3>T_2>T_1$, the step of using a sealed fused silica reaction tube having a first temperature zone which is positioned between the T_1 and T_4 zones, a second temperature zone which is positioned between T_3 and T_2 zones, and a separating wall between the first and second temperature zones with a thin silica tube (capillary) retained thereby to allow the vapor of the volatile constituent to diffuse through but to prevent the vapor of volatile compounds of the non-volatile constituents from diffusing therethrough, the step of placing the volatile constituent such as phosphorous in the first temperature zone where the vapor pressure of said volatile constituent is controlled by the temperature T_1, and the step of positioning the non-volatile constituent such as gallium and a transport agent, particularly a halogen or a halide of the non-volatile constituents in the hotter part (T_3) of the second temperature zone wherein the thin layer of said semiconducting compound is produced on the surface of the solution of the non-volatile constituent due to supersaturation of the volatile constituent. This thin layer of semiconducting compound reacts with the transport agent to form volatile compounds which diffuse to the colder part (T_2) of the second temperature zone and react with the volatile constituent to form a crystal of said semiconducting compound, but are prevented from diffusing into the first temperature zone by said separating wall.

3,690,847

METHOD OF PRODUCING HIGHLY PURE, PARTICULARLY SILICON FREE GALLIUM ARSENIDE

Hans Merkel and Siegfried Leibenzeder, Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Aug. 18, 1970, Ser. No. 64,770
Claims priority, application Germany, Aug. 27, 1969, P 19 43 550.8
Int. Cl. C01b 27/00; C01f 15/00
U.S. Cl. 23—294 **6 Claims**



Method of producing highly pure gallium arsenide. The product is particularly silicon free. The method utilizes the "two temperature" technique. Two gallium bodies are provided, the first is at a temperature slightly above the melting point of gallium arsenide and the second is at a temperature of 1250° to 1350° C.

3,690,848

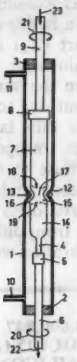
NECKED HOUSING IN FLOAT ZONE REFINING

Michel Ayel, Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed July 21, 1970, Ser. No. 56,774
Claims priority, application France, July 21, 1969, 6924719
Int. Cl. B01j 17/08
U.S. Cl. 23—301 SP **7 Claims**

A method of producing a semi-conductor single crystal by floating zone melting of a vertical rod of semi-conductor material in a controllable atmosphere inside a tubular, hermetically closed chamber, which rod is capable of performing at least one translatory movement relative to a coil surrounding the rod and traversed by high-frequency current. The coil is arranged to surround

the chamber at the level of narrowed portion thereof. The rod is melted from its lower end and is brought into contact with a seed crystal. The single crystal formed has the



same diameter as the rod. The molten zone contains a narrowed zone, the diameter of which is smaller than the diameter of the solid portions of the rod.

3,690,849
CERMET-TYPE ALLOY

Nikolajs Bredzs, Detroit, and Forbes M. Miller, Dearborn, Mich., assignors to Wall Colmonoy Corporation

Application Feb. 19, 1969, Ser. No. 800,540, now Patent No. 3,547,673, dated Dec. 15, 1970, which is a continuation-in-part of application Ser. No. 646,654, June 16, 1967. Divided and this application July 7, 1969, Ser. No. 871,124

Int. Cl. B22f *1/00*

U.S. Cl. 29—182.5 **3 Claims**

An improved cermet-type alloy and method of making same which is particularly adaptable for forming protective surface coatings on heat-resistant alloys. A particulated mixture is formed containing titanium and/or zirconium reactive metal constituents that undergo an exothermic reaction upon fusion at an elevated temperature in a substantially inert atmosphere with silicon and/or boron present in the mixture forming the corresponding silicides or borides of the reacted metals in situ which are subsequently precipitated as a uniformly dispersed discontinuous phase in a continuous phase of a nickel and/or cobalt base matrix. The invention also encompasses novel powder compositions for exothermically forming the cermet-type alloys and coatings.

3,690,850
ZIRCONIUM ALLOY TUBE WITH ZIRCONIUM HYDRIDE INCLUSIONS

John Olof Edstrom, Sven Eric Innerman, Bengt Henrik Berg, and Brian Edward Mills, Sandviken, Sweden, assignors to Sandvikens Jernverks Aktiebolag, Sandviken, Sweden

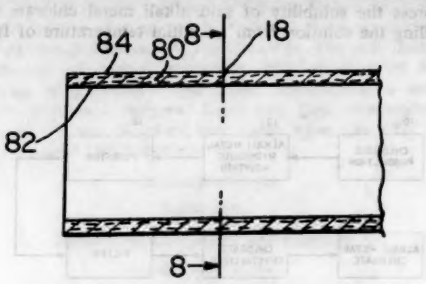
Original application May 25, 1966, Ser. No. 552,766, now Patent No. 3,487,675, dated Jan. 6, 1970. Divided and this application Mar. 3, 1969, Ser. No. 817,600

Claims priority, application Sweden, Feb. 1, 1966, 1,242/66

Int. Cl. B22f *5/00*

U.S. Cl. 29—183 **4 Claims**

A cold-worked tube of zirconium or zirconium alloy in which zirconium hydride inclusions formed in the metal are oriented to lie generally parallel to the inner and outer surfaces of the tube, rather than radially of the tube;



whereby cracking and resulting leaking of the tube are rendered negligible.

3,690,851
AUTOMATIC ANTIKNOCK RATING AND ADJUSTMENT APPARATUS

John T. Jones, Ardsley, William C. Ludt, Yonkers, and Hudson W. Kellogg, Dobbs Ferry, N.Y., assignors to Ethyl Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 617,754, Jan. 24, 1967, now Patent No. 3,485,598, which is a continuation-in-part of applications Ser. No. 205,015, June 25, 1962, now Patent No. 3,383,904, Ser. No. 299,583, Aug. 2, 1963, and Ser. No. 377,192, June 23, 1964. This application Dec. 19, 1969, Ser. No. 886,458

Int. Cl. C10k *3/00*

U.S. Cl. 44—2 **22 Claims**

Automatic antiknock monitoring and/or adjusting apparatus having detonation testing engine operated on fuel to be monitored or adjusted, and automatic controls to change its compression ratio in response to changes in detonation intensity, with occasional resetting against results using a reference fuel. Maximum knock fuel-air ratio is used and the automatic controls can also control the addition of high antiknock blend ingredient to the fuel.

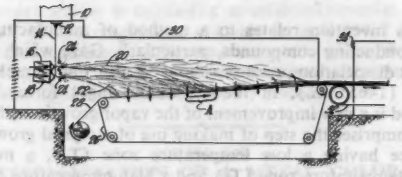
3,690,852
METHOD OF PRODUCING GRADED FIBROUS FILTER MEDIA

Irving N. Smith, Saratoga, and Jack R. Pfeffer, Los Gatos, Calif., assignors to Owens-Corning Fiberglas Corporation

Filed Dec. 29, 1969, Ser. No. 888,767

Int. Cl. C03c *27/00*

U.S. Cl. 65—3 **7 Claims**



A process for producing a graded fibrous filter media preformed in a mat by intermingling mineral fibers of one average diameter with fibers of smaller average diameter in the area of a plane parallel with a major face of the mat. Two groups of fibers of different diameter are attenuated and blown horizontally upon a moving conveyor such

that the groups intermingle with each other to a limited extent prior to deposition on the conveyor to produce a two layer, graded density product having a gradual transition between fiber layers.

3,690,853

METHOD OF MAKING HIGH RESOLUTION IMAGE TRANSMITTING FIBER OPTICS BUNDLES

Jack M. Law, Mountain View, Calif., assignor to Optics Technology, Inc., Palo Alto, Calif.

Filed Aug. 19, 1970, Ser. No. 65,041
Int. Cl. C03c *15/00, 23/20*
U.S. Cl. 65—4 4 Claims

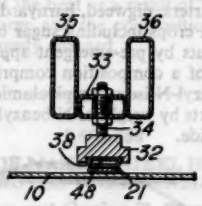
A large number of light-transmitting conventionally clad glass rods enveloped or supercladded with a bonding material are gathered, aligned, heated and stretched while maintained in alignment to reduce their diameter and bond them to each other to form a bundle of mutually aligned fibers. The material for the light-transmitting rods is selected so that it withstands a chemical solution in which the bonding material is soluble. Intermediate portions of the rod are immersed in the solution to dissolve the bonding material from between the individual fibers while the ends of the fibers remain embedded therein, fixed with respect to each other and in their original, mutually aligned position.

3,690,854

METHOD FOR TEMPERATURE CONTROL OF IONIC ELECTRODE

Albert Sidney Robinson, 7 Dunster Road, Birkdale, Southport, England; Jack Lawrenson, 22 Sackville Road, St. Helens, England; and Edward Russell Ormesher, 48 Heyes Ave., Rainford, England

Filed Aug. 21, 1969, Ser. No. 859,238
Claims priority, application Great Britain, Aug. 30, 1968, 41,595/68
Int. Cl. C03c *15/00;* C03b *18/00*
U.S. Cl. 65—30 5 Claims



The characteristics of glass, e.g. float glass, are modified by a body of molten material which contacts the glass surface and clings to a locating member positioned adjacent the glass surface, and the temperature of that molten body is regulated independently of the temperature of the glass.

3,690,855

METHOD FOR PRODUCING TiO_2–SiO_2 GLASSES

Peter C. Schultz, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Aug. 19, 1970, Ser. No. 65,096
Int. Cl. C03c *3/04*
U.S. Cl. 65—117 3 Claims

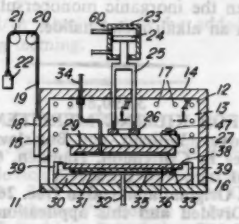
TiO_2–SiO_2 glasses containing 12–20% by weight TiO_2 are disclosed. These glasses may be heat treated to provide a controlled low or zero thermal coefficient of expansion over the range of −200° C. to +700° C.

3,690,856

WELDED DOUBLE GLAZING UNITS

John Bryan, Saint Helens, England, assignor to Pilkington Brothers, Limited, Liverpool, England

Filed June 5, 1970, Ser. No. 43,881
Claims priority, application Great Britain, June 11, 1969, 29,679/69
Int. Cl. B66c *1/02;* C03b *23/02*
U.S. Cl. 65—287 10 Claims



Vacuum holding apparatus for engaging the upper surface of a sheet of glass in the manufacture of an all-glass welded double glazing unit, includes a chuck platen and a sheet-holding platen connected by at least two bolt connections, each bolt connection including spring means resiliently drawing the platens together.

3,690,857

METHOD OF CONTROLLING AQUATIC WEEDS, AND OTHER UNDESIRED FORMS OF AQUATIC LIFE, WITHOUT ADVERSELY AFFECTING FISH

Charles M. Blair, Jr., Fullerton, Calif., assignor to Magna Corporation, Santa Fe Springs, Calif.

No Drawing. Filed Feb. 19, 1969, Ser. No. 800,723
Int. Cl. A01n *9/24, 9/28*
U.S. Cl. 71—66 4 Claims

The disclosure relates to a method of controlling a wide spectrum of life found in watery media, including aquatic plants, marine animals, algae, fungi, molds, slimes, bacteria and symbiotic growths, without adversely affecting fish populations. The method comprises adding an acrolein diacetal to a body of water containing the aquatic life to be controlled, in quantity sufficient and for a time period sufficient to kill weeds and other undesired forms of aquatic life without at the same time killing the fish present in such body. More specifically, the acrolein diacetal added is one derived from an aliphatic alcohol containing less than seven carbon atoms. A particularly preferred acrolein diacetal employed in the present method is acrolein dimethyl acetal.

3,690,858

COMBATING WEEDS AND ALGAE WITH 2-CHLORO-5-ARYL-1,3,4-THIADIAZOLES

Norman A. Dahle, Mission, Kans., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Oct. 24, 1969, Ser. No. 869,329
Int. Cl. A01n *9/12*
U.S. Cl. 71—67 2 Claims

5-aryl-tetrazoles may be reacted with thiophosgene to yield 2-chloro-5-aryl-1,3,4-thiadiazoles which have unusu-

ally selective phytotoxic properties, being particularly useful in combating crabgrass and algae.

3,690,859

Patent Not Issued For This Number

3,690,860

METHOD FOR CONTROLLING SLIME IN AQUEOUS SYSTEMS

Murrell L. Salutsky, Highland Park, and Salem Shair, Chicago, Ill., assignors to Chemed Corporation, Cincinnati, Ohio

No Drawing. Filed Mar. 17, 1970, Ser. No. 20,432
Int. Cl. A01n *11/04*
U.S. Cl. 71—67 **5 Claims**

The formation and/or growth of slime in aqueous systems is controlled by adding to the water in such systems a slime inhibiting amount of a water soluble inorganic salt of monopersulfuric acid. Improved slime control is obtained when the inorganic monopersulfate salt is used together with an alkali metal halide.

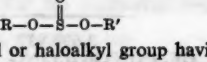
3,690,861

METHOD FOR KILLING MERISTEMATIC BUDS

Rupert A. Covey, Wolcott, and Bogislav von Schmeling and Charles E. Crittendon, Hamden, Conn., assignors to Uniroyal, Inc., New York, N.Y.

No Drawing. Original application Dec. 26, 1967, Ser. No. 693,117. Divided and this application May 1, 1970, Ser. No. 43,657
The portion of the term of the patent subsequent to Feb. 16, 1988, has been disclaimed
Int. Cl. A01n *9/14*
U.S. Cl. 71—76 **10 Claims**

Sulfite esters of the following general formula are used as chemical pruning agents:



wherein R is an alkyl or haloalkyl group having 1 to 18 carbon atoms and R′ is a carboalkoxyalkyl or acryloxyalkyl group or a halo substituted derivative thereof having from 3 to 9 carbon atoms.

3,690,862

2,2,5,5-TETRAKIS(POLYHALOMETHYL)-4-OXAZOLIDINONE HERBICIDES

William J. Middleton, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed July 3, 1969, Ser. No. 839,054
Int. Cl. A01n *9/00*
U.S. Cl. 71—88 **6 Claims**

2,2,5,5 - tetrakis(polyhalomethyl) - 4 - oxazolidinones have been found to be useful as herbicides for the control of undesired vegetation. Illustrative of such oxazolidinones are (i) 2,5 - bis(difluoromethyl) - 2,5 - bis(trifluoromethyl) - 4 - oxazolidinone and (ii) 2,2,5,5 - tetrakis(difluoromethyl)-4-oxazolidinone.

3,690,863

ESTERS OF 3-(CARBOXYAMINO)- AND 3-(THIOCARBOXYAMINO)-2-SUBSTITUTED CROTONAMIDES AND THEIR USE AS HERBICIDES

Peter Gorike, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Apr. 19, 1968, Ser. No. 722,535
Int. Cl. A01n *9/20*
U.S. Cl. 71—111 **6 Claims**

This invention relates to the use of esters of [2-substituted-1-methyl-2-(substituted carbamoyl)vinyl]carbamic acids, 2-substituted-3-(3-substituted ureido)-N-substituted crotonamides, and esters of [2-substituted-3-(alkoxy or phenoxycarbonylamino)crotonoyl]carbamic acids as herbicides and new compounds and herbicidal compositions.

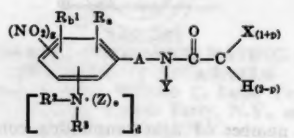
3,690,864

HERBICIDAL COMPOSITION AND METHOD

Philip C. Hamm, Glendale, and Angelo John Speziale, Creve Coeur, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Original application Nov. 20, 1967, Ser. No. 684,494, now Patent No. 3,557,210, dated Jan. 19, 1971. Divided and this application May 6, 1970, Ser. No. 47,932
Int. Cl. A01n *9/20*
U.S. Cl. 71—118 **12 Claims**

2-haloacetamides of the formula



wherein X is halogen (Cl, Br, F and I), *p* is an integer from 0 to 2 inclusive, A is alkenylene of at least 3 and not more than 6 carbon atoms, R is selected from the group consisting of alkyl, alkenyl and alkoxy of not more than 4 carbon atoms, *a* is an integer from 0 to 5, R^1 is halogen (Cl, Br, F and I), *b* is an integer from 0 to 3, R^2 and R^3 are selected from the group consisting of hydrogen and alkyl of not more than 4 carbon atoms, *e, d* and *g* are each integers from 0 to 1, Z is an acid forming a phytotoxic acid addition salt, and Y is selected from the group consisting of hydrogen, alkyl, alkenyl, alkynyl, phenyl and cinnamyl of not more than 12 carbon atoms. Utility as phytotoxicants.

3,690,865

METHOD OF COMBATING UNWANTED VEGETATION IN SUGAR BEET FIELDS

James L. Ahle, Shawnee Mission, Kans., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Dec. 8, 1970, Ser. No. 96,249
Int. Cl. A01n *9/02*
U.S. Cl. 71—118 **2 Claims**

Undesired vegetation such as crabgrass, black nightshade, lambsquarters, pigweed, barnyard grass and kochia are combated in crops including sugar beets, cotton, soybeans and peanuts by pre-emergent application of an effective amount of a composition comprising one part by weight of N-benzyl-N-isopropylpivalamide and from one-third to three parts by weight of N-benzyl-N-isopropyl-3,5-dichlorobenzamide.

3,690,866

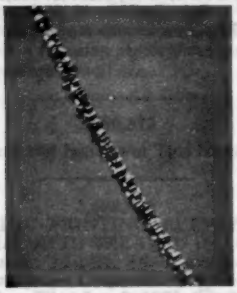
LEAD FIBERS USEFUL FOR GALVANIC CELL ELECTRODES

Demetrios V. Louzos, Rocky River, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed Apr. 6, 1970, Ser. No. 25,860
Int. Cl. C22b *23/00*
U.S. Cl. 75—.5 **1 Claim**

Stable, high surface area lead fibers composed of a single elongated chain of cubic growths interconnected

and grown along one direction. The lead fibers are prepared by the electrolysis of a soluble lead salt-containing electrolyte solution under conditions of extremely high



cathode current density. Galvanic cell electrodes are fabricated using the lead fibers by compression molding techniques.

3,690,867

ELECTRIC-ARC STEELMAKING

Jaroslaw George Sibakin, Ancaster, Ontario, and Gordon Alan Roeder and Paul Henry Heathcote Hookings, Burlington, Ontario, Canada, assignors to The Steel Company of Canada Limited, Hamilton, Ontario, Canada, and Metallgesellschaft A.G., Frankfurt am Main, Germany

Continuation-in-part of application Ser. No. 652,143, July 10, 1967, now Patent No. 3,472,649, which is a continuation-in-part of application Ser. No. 571,837, Aug. 11, 1966, now Patent No. 3,472,650. This application Oct. 14, 1969, Ser. No. 866,272

Int. Cl. C21c *5/52*; H05b *1/00*

U.S. Cl. 75—12 **3 Claims**

An efficient method of steelmaking in a direct arc furnace utilizing substantially continuous charging of discrete iron-bearing material into the arc flare regions at a controlled rate such that the particles of material fall into the molten metal bath without forming clusters of unmelted particles. Slag forming and alloy perfecting additions are made such that the desired carbon content and tap temperature are reached near the end of the continuous charging or during a shortened refining period after melting. A steady vigorous boil of the bath continues throughout the heat as a result of the excess carbon of the initial charge and the composition of the discrete material continuously charged.

3,690,868

METHOD OF MAKING STEEL HAVING AN IMPROVED HARDENABILITY

Barry A. J. James and Gordon T. Brown, Wolverhampton, England, assignors to G.K.K. Group Services Limited, Warley, Worcester, England

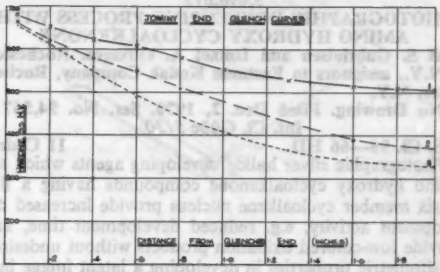
Filed Apr. 16, 1970, Ser. No. 28,997

Claims priority, application Great Britain, Apr. 17, 1969, 19,656/69

Int. Cl. C21c *7/10*

U.S. Cl. 75—49 **9 Claims**

A method of making steel having an improved hardenability wherein the steel melt, prior to teeming, is raised to a temperature of not less than 1675° C. If desired,



aluminium and/or titanium may be added to the melt before or during teeming.

3,690,869

MARTENSITE STAINLESS STEEL

Yakov Mikhailovich Potak, Zelenodolskaya, ulitsa 23, korpus 1, kv. 29; Julian Felixovich Orzhekhovsky, Leningradskoe shosse 75, korpus 2, kv. 25; Vladimir Vladimirovich Sachkov, Scherbakovskaya ulitsa 40, kv. 160; Efim Solomonovich Kagan, Profsojuznaya ulitsa 40, korpus 1, kv. 10; Anna Ivanovna Valdman, 1-i pereulok Izmailovskogo zverintsa 7, kv. 2; Nadezhda Nikolaevna Shpagina, 9-ya ulitsa Sokolinoi Gory 3, kv. 40; Mikhail Vasilievich Poplavko-Mikhailov, Maly Pionersky pereulok 5, kv. 56; Alexandr Pavlovich Fomin, 4-i Volkovsky proezd 3, korpus 1, kv. 154; and Simon Leibovich Natapov, Leningradsky prospekt 24, kv. 8, all of Moscow, U.S.S.R.

No Drawing. Filed Aug. 26, 1970, Ser. No. 67,217

Int. Cl. C22c *37/10*

U.S. Cl. 75—124 **1 Claim**

The proposed invention relates to a material for welding-wire for steels, which material comprises carbon, manganese, silicon, nickel, chromium, titanium, aluminum, molybdenum, zirconium, calcium, boron and iron.

3,690,870

STAINLESS STEEL

Eugene Williams, Pittsburgh, Pa., assignor to United States Steel Corporation

No Drawing. Filed Aug. 26, 1970, Ser. No. 67,293

Int. Cl. C22c *37/10, 39/54*

U.S. Cl. 75—124 **2 Claims**

A low cost ferritic stainless steel with exceptionally good corrosion resistant properties having the following composition:

Carbon	0.1% maximum.
Manganese	2.0% maximum.
Silicon	0.5% maximum.
Chromium	6–12%.
Aluminum	2–7%.
Copper	0.2–3.0%.
Molybdenum	up to 2.0%.
Iron	balance.

wherein chromium plus aluminum is at least about 13.0% and copper plus molybdenum is at least 0.5%.

3,690,871
Patent Not Issued For This Number

3,690,872
PHOTOGRAPHIC DEVELOPING PROCESS WITH AMINO HYDROXY CYCLOALKENONE

Rolf S. Gabrielsen and Ismael A. Olivares, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

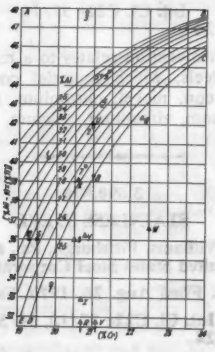
No Drawing. Filed Dec. 2, 1970, Ser. No. 94,567
Int. Cl. G03c 5/30
U.S. Cl. 96—66 HD 11 Claims

Photographic silver halide developing agents which are amino hydroxy cycloalkenone compounds having a five or six member cycloalkene nucleus provide increased development activity, e.g. reduced development time, and provide low-colored oxidation products without undesired sensitometric properties in developing a latent image in a photographic element. These developing agents can be employed in photographic elements and/or processing compositions. They can be employed in combination with other silver halide developing agents and addenda employed in photographic elements and/or processing compositions. They are suitable, for instance, in elements for dry processing with heat, and/or processing solutions and/or photographic emulsions.

3,690,873
DESULPHURIZING PLANT ALLOY

Paul Isidore Fontaine, Solihull, England, assignor to The International Nickel Company, Inc., New York, N.Y.

Filed July 9, 1969, Ser. No. 840,242
Claims priority, application Great Britain, July 9, 1968, 32,650/68
Int. Cl. C22c 19/00, 39/20
U.S. Cl. 75—134 F 8 Claims

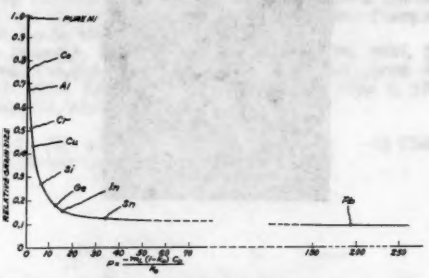


Directed to alloys having improved resistance to carburization and sulfidation, good stress rupture strength, and structural stability on prolonged heating containing, by weight, about 32% to about 48% nickel, about 19% to about 24% chromium, about 2.2% to about 3.5% aluminum, and the balance essentially iron, wherein the nickel content and the chromium content are correlated to the aluminum content such that the minimum nickel content increases and/or the maximum chromium content decreases as the aluminum content increases.

3,690,874
GRAIN SIZE OF METAL CASTINGS

Lemuel A. Tarshis, Latham, and James L. Walker, Schenectady, N.Y., assignors to General Electric Company

Filed Dec. 5, 1969, Ser. No. 882,512
Int. Cl. C22c 19/00
U.S. Cl. 75—170 2 Claims



A definite relationship is disclosed between cast structure and a parameter which is obtainable from existing phase diagram information. The parametric relationship

$$P=\frac{-(m_L)(1-K_o)C_o}{K_o}$$

wherein m_L is the liquidus line slope, K_o is the solute distribution coefficient and C_o is the bulk composition in terms of atomic percent of the grain size refining additive.

3,690,875
METHOD OF MAKING A CERMET-TYPE ALLOY

Nikolajs Bredzs, Detroit, and Forbes M. Miller, Dearborn, Mich., assignors to Wall Colmonoy Corporation

Application Feb. 19, 1969, Ser. No. 800,540, now Patent No. 3,547,673, dated Dec. 15, 1970, which is a continuation-in-part of application Ser. No. 646,654, June 16, 1967. Divided and this application July 7, 1969, Ser. No. 871,122
Int. Cl. B22f 1/00
U.S. Cl. 75—202 8 Claims

An improved cermet-type alloy and method of making same which is particularly adaptable for forming protective surface coatings on heat-resistant alloys. A particulated mixture is formed containing titanium and/or zirconium reactive metal constituents that undergo an exothermic reaction upon fusion at an elevated temperature in a substantially inert atmosphere with silicon and/or boron present in the mixture forming the corresponding silicides or borides of the reacted metals in situ which are subsequently precipitated as a uniformly dispersed discontinuous phase in a continuous phase of a nickel and/or cobalt base matrix. The invention also encompasses novel powder compositions for exothermically forming the cermet-type alloys and coatings.

3,690,876
METHOD FOR PRODUCING SINTERED COBALT-BASE ALLOY CONTAINING GOLD

James S. Smith, Leslie Paul Clare, and Robert M. Kubicki, Towanda, Pa., assignors to GTE Sylvania Incorporated

No Drawing. Filed Apr. 13, 1971, Ser. No. 133,727
Int. Cl. B22f 1/00
U.S. Cl. 75—211 6 Claims

Cobalt-base alloys containing gold are prepared by a powder metallurgy process comprising dissolving a predetermined amount of gold in sufficient aqua regia to form

a solution, adding a sufficient amount of a cobalt containing constituent to the solution to achieve the cobalt to gold ratio in the resulting mixture that is desired in the alloy, drying the mixture to form a powder, heating the powder in a reducing atmosphere under controlled time and temperature conditions, compacting the resulting reduced powder into a shaped article and sintering the shaped article in a reducing atmosphere under controlled time and temperature conditions.

3,690,877

Patent Not Issued For This Number

3,690,878

PLANOGRAPHIC PRINTING ELEMENT HAVING CARBOXYLIC ACID TREATED IMAGE AREAS

William H. Tandy, Mentor, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

No Drawing. Filed Jan. 9, 1970, Ser. No. 1,887
Int. Cl. G03g *5/00, 13/00*
U.S. Cl. 96—1.8 **11 Claims**

A planographic printing plate is provided having image areas formed by treatment with a carboxylic acid as a marking ink, the acid having from about 12 carbon atoms to about 22 carbon atoms. The plate is preferably a paper-based, electrophotosensitive sheet but can comprise other backing members and other image-receptive printing surfaces.

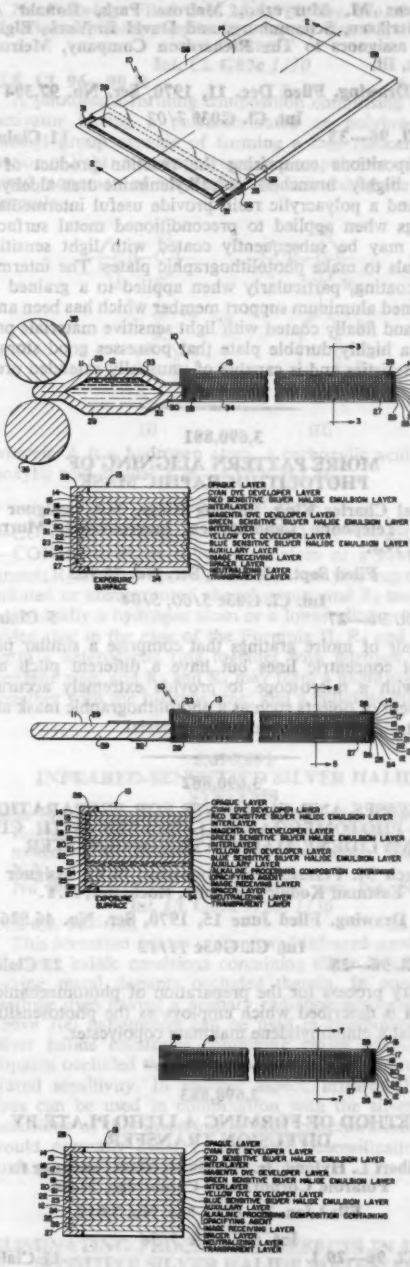
3,690,879

PHOTOGRAPHIC DIFFUSION TRANSFER COLOR PROCESS AND COMPOSITE FILM UNIT FOR USE THEREIN

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of application Ser. No. 782,075, Dec. 9, 1968. This application Mar. 4, 1971, Ser. No. 120,942
The portion of the term of the patent subsequent to Mar. 30, 1988, has been disclaimed
Int. Cl. G03c *7/00*
U.S. Cl. 96—3 **17 Claims**

Photographic film units and processes employing the same to obtain a color transfer print viewable without separation of the layer containing same as a reflection print, which film unit comprises a negative component comprising at least one light-sensitive silver halide layer having associated therewith, in the same and/or in an adjacent layer, a dye image-forming material for providing, as a function of development of the associated silver halide, an imagewise distribution of a mobile and diffusible color-providing material; and a positive component comprising at least a dyeable stratum adapted for receiving said diffusible color-providing material to provide a color transfer image; means for providing an opacifying agent between said negative and positive components to mask said negative component and to provide a background for viewing the color transfer image imparted to said dyeable stratum by reflected light without separation of said positive component containing said transfer image from said negative component; said positive and negative components being confined in superposition between a pair of dimensionally stable layers or support members, one of which is vapor permeable to permit osmotic transpiration of processing composition solvent to decrease the solvent concentration of the processing composition applied to develop said film unit from a first solvent concentration at which the dye image-forming material is soluble and diffusible to a second solvent concentration at which it is substantially non-diffusible, the other of said dimensionally stable layers being impervious or relatively impervious to solvent vapor, at least the dimensionally stable layer associated with the positive component being substantially transparent to permit viewing therethrough of the color transfer image, the other of said dimensionally stable layers, i.e., the one associated with the negative component, preferably being opaque.



The film unit preferably additionally includes means for applying between said negative and positive components an aqueous alkaline processing composition having said first solvent concentration, and the film unit further preferably contains means for reducing the pH of said processing composition subsequent to substantial dye transfer image formation.

3,690,880

INTERMEDIATE COATING COMPOSITIONS AND LONG RUNNING PLANOGRAPHIC PLATES PREPARED THEREWITH

Thaddeus M. Muzyczko, Melrose Park, Ronald A. Frederiksen, Schaumburg, and David L. York, Elgin, Ill., assignors to The Richardson Company, Melrose Park, Ill.

No Drawing. Filed Dec. 11, 1970, Ser. No. 97,394

Int. Cl. G03f 7/02

U.S. Cl. 96—33 11 Claims

Compositions comprising the reaction product of a novel, highly branched polyalkylenimine-urea-aldehyde resin and a polyacrylic resin provide useful intermediate coatings when applied to preconditioned metal surfaces which may be subsequently coated with light sensitive materials to make photolithographic plates. The intermediate coating, particularly when applied to a grained or ungrained aluminum support member which has been anodized and finally coated with light sensitive materials produces a highly durable plate that possesses good storage characteristics and is capable of unusually extended press runs.

3,690,881

MOIRE PATTERN ALIGNING OF PHOTOLITHOGRAPHIC MASK

Michael Charles King, Basking Ridge, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 28, 1970, Ser. No. 75,983

Int. Cl. G03c 5/00, 5/04

U.S. Cl. 96—27 5 Claims

A pair of moire gratings that comprise a similar pattern of concentric lines but have a different pitch are used with a microscope to provide extremely accurate alignment of objects such as a photolithographic mask and a substrate of a semiconductive material.

3,690,882

PROCESSES AND ELEMENTS FOR PREPARATION OF PHOTOMECHANICAL IMAGES WITH CINNAMYLIDENE MALONATE COPOLYESTER

Wojciech M. Przezdziecki, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed June 15, 1970, Ser. No. 46,526

Int. Cl. G03c 11/12

U.S. Cl. 96—28 23 Claims

A dry process for the preparation of photomechanical images is described which employs as the photosensitive material a cinnamylidene malonate copolyester.

3,690,883

METHOD OF FORMING A LITHO PLATE BY DIFFUSION TRANSFER

Albert L. Hyland, Jr., Wayland, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 30, 1970, Ser. No. 7,015

Int. Cl. G03c 5/54

U.S. Cl. 96—29 L 11 Claims

A method for selectively eliminating hydrophobic portions of a photolithographic printing surface to modify the information contained in said surface or add information to said surface. Essentially, the method involves the step of applying a hydrophilic coating to selected portions of the hydrophobic printing pattern contained in said plate.

3,690,884

PHOTOGRAPHIC DRY COPYING PROCESS

Maria Scheibitz and Anita von Konig, Leverkusen, Helmut Kampfer, Cologne, Dietmar Mayer, Leverkusen, Klaus Sasse and Gunter Kolb, Cologne, Hans Ludwig Honig, Leverkusen, and Werner Meiser, Wuppertal-Elberfeld, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Apr. 20, 1970, Ser. No. 30,337

Claims priority, application Germany, May 24, 1969, P 19 26 658.1

Int. Cl. G03c 5/54

U.S. Cl. 96—29 14 Claims

Photographic prints can be produced by imagewise exposure of a light-sensitive layer containing a transferable image producing compound and a light-sensitive compound capable of reacting upon exposure with an image producing compound to yield a non-transferable reaction product. The exposed layer is heated and contacted with an image receiving layer containing compounds capable of reacting with the heat transferred image producing compound to form the image dye.

3,690,885

IMAGE RECEIVING LAYER FOR THE SILVER SALT DIFFUSION PROCESS

Werner Krafft, Leverkusen, Peter Kruck, Cologne, and Rudolf Meyer and Maria Scheibitz, Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Nov. 4, 1970, Ser. No. 86,943

Claims priority, application Germany, Nov. 6, 1969, P 19 55 899.7

Int. Cl. G03c 5/54

U.S. Cl. 96—29 R 5 Claims

Continuous-tone or line images can be produced by the silver salt diffusion process by imagewise exposing a silver halide emulsion layer transferring the silver halide from the unexposed positions to an image-receiving layer and reducing the transferred silver halide to silver. Particularly useful for the image-receiving layer is a water insoluble mixture of cellulose acetate and an acetal of polyvinyl alcohol which is permeable to moisture.

3,690,886

PRINT-OUT PROCESS UTILIZING CHEMICALLY SENSITIZED LEAD SALT IN ORGANOPHILIC BINDER

Walter August Van den Heuvel, Berchem, Johan Eugeen Vanhalst, Wilrijk, and Eric Maria Brinckman, Mortsel, Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

No Drawing. Filed Nov. 12, 1969, Ser. No. 876,064

Claims priority, application Great Britain, Nov. 12, 1968, 53,668/68

Int. Cl. G03c 1/00, 5/24

U.S. Cl. 96—88 11 Claims

A print-out recording method and material using a recording layer comprising a photosensitive lead halide salt dispersed in an organophilic binder. Preferred lead salts are lead iodide, lead bromide, or a crystalline mixture thereof. A sensitizing agent may be added to increase the photosensitivity of the lead salt. Faint print-out images may be intensified by treatment with a physical development using, for instance, a solution containing a reducing agent and metal ions of a metal more electropositive than lead.

3,690,887

PHOTOSENSITIVE SUB-PIGMENTARY TITANIUM DIOXIDE PRODUCED BY CALCINATING TITANIUM HYDRATE FROM 725° C. TO 825° C.

Horace F. Dantro, Toms River, N.J., assignor to Knorr-Bremse G.m.b.H., Munich, Germany

No Drawing. Original application June 26, 1967, Ser. No. 648,955. Divided and this application Aug. 20, 1970, Ser. No. 65,723

Int. Cl. G03c *1/00*

U.S. Cl. 96—88 3 Claims

This invention relates in general to a method for the preparation of titanium dioxide material which possesses photosensitive properties. More specifically it relates to a particular type of photosensitive titanium dioxide material which possesses sufficient photoreactive properties to be commercially useful in systems designed to respond to exposure to light i.e., photographic emulsions, copy paper and the like.

3,690,888

PROCESS OF MAKING SILVER HALIDE EMULSIONS HAVING POLYVALENT METAL IONS OCCLUDED THEREIN

Robert Elwin Bacon, Ernest John Perry, and Evan Thomas Jones, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed June 4, 1970, Ser. No. 43,565

Int. Cl. G03c *1/02*

U.S. Cl. 96—94 13 Claims

An improved process is disclosed for preparing silver halide emulsions which contain grains having polyvalent metal ions occluded therein; the improvement comprises the step of forming the silver halide grains in the presence of (1) a peptizer consisting essentially of an acrylic polymer and (2) the polyvalent metal ions to be occluded inside the grains.

3,690,889

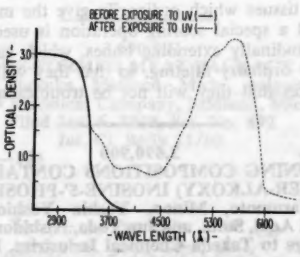
PHOTOCOLORABLE VACUUM SUBLIMED XANTHENE DYE

Sol Esther Harrison, Huntingdon Valley, Pa., and Robert Drake, Old Bridge, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Sept. 30, 1970, Ser. No. 76,906

Int. Cl. G03c *1/52*

U.S. Cl. 96—90 7 Claims



An optical recording and storage media comprises a substrate having an essentially colorless vacuum sublimed xanthene dye type film thereon. The xanthene dye is of the type having a pendant phenyl ring at the 9th carbon of the xanthene structure. A COOH group is present on the carbon atom of the phenyl ring immediately adjacent the linking carbon of the ring. Electron withdrawing groups are present on the xanthene structure. An example of such a material is rhodamine B.

3,690,890

PHOTORESIST COMPOSITION

Hiroyoshi Yamaguchi and Akio Iwaki, Tokyo, and Hirosi Tokura, Tsuru, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

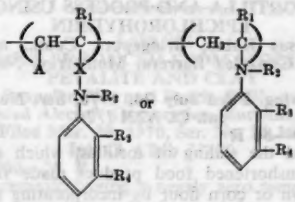
No Drawing. Filed Oct. 26, 1970, Ser. No. 84,114

Claims priority, application Japan, Oct. 31, 1969, 44/86,886

Int. Cl. G03c *1/70*

U.S. Cl. 96—90 R 8 Claims

A photoresist-forming composition comprising a photo activator having a polychlorinated or polybrominated methyl group capable of forming a free radical by the action of light: a homopolymer or a co-polymer with other vinyl monomer, of a monomer represented by the general formula



wherein A is a hydrogen atom, a carboxylic acid or carboxylic acid amide; X is —$COOCH_2CH_2$—, —$CONHCH_2CH_2$—, —CONH—, —CH_2—, —ϕSO_2NH—, —$\phi SO_2O\phi$—, —CONHϕ—; R_1 is a hydrogen atom or a lower alkyl group; R_2 is a hydrogen atom, a lower alkyl group or a substituted or unsubstituted phenyl group; and R_3 and R_4 are individually a hydrogen atom or a lower alkyl group, provided that in the case of the Formula II, R_2 and R_3 may form a heterocyclic ring together with nitrogen and the benzene ring, and R_3 and R_4 may form a naphthalene ring together with the benzene ring; and a cellulose ether.

3,690,891

INFRARED-SENSITIZED SILVER HALIDE SYSTEMS

John Spence, Honeoye Falls, Paul Brewster Gilman, Jr., Rochester, and Cynthia Geer Ulbing, Fairport, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed July 20, 1970, Ser. No. 56,700

Int. Cl. G03c *1/28, 1/36*

U.S. Cl. 96—108 26 Claims

This invention relates to improved infrared-sensitization of silver halide emulsions containing silver halide grains having metal dopants occluded therein. In one aspect, methine dyes having a primary radiation-adsorption peak above 700 nanometers can be used in combination with silver halide emulsions containing grains having metal dopants occluded therein to produce highly improved infrared sensitivity. In another aspect, infrared-absorbing dyes can be used in combination with the silver halide emulsions of this invention in high concentrations which would normally cause considerable desensitization of a surface-sensitive silver halide emulsion.

3,690,892

ELIMINATING PROCESSING DEFECTS IN LIGHT-SENSITIVE SILVER HALIDE MATERIALS

Charles W. Fairbanks and William J. Rosecrants, Jr., Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Apr. 6, 1970, Ser. No. 26,087

Int. Cl. G03c *1/02, 1/30*

U.S. Cl. 96—110 15 Claims

Incorporating a water-soluble inorganic acid salt (e.g., cadmium nitrate) and a water-soluble alkylenediamine

polycarboxylic compound (e.g., disodium salt of ethylenediamine tetraacetic acid) into a light-sensitive silver halide emulsion layer or a contiguous layer eliminates undeveloped areas where development normally should have occurred caused by localized pre-wetting of the exposed photosensitive surface prior to immersing the photographic element in the first processing solution.

ERRATA

For Classes 96—50 and 96—66 HD see:
Patents Nos. 3,690,871 and 3,690,872

3,690,893
TORTILLA AND PROCESS USING EPICHLOROHYDRIN

Manuel Jesus Rubio, Bridgeport, Conn., assignor to Roberto Gonzalez Barrera, Monterrey, Nuevo Leon, Mexico

No Drawing. Filed July 24, 1970, Ser. No. 58,142
Int. Cl. A23l *1/10*
U.S. Cl. 99—80 R **2 Claims**

To retard the staling of tortillas, which are an unleavened unshortened food product made from nixtamalized corn or corn flour by incorporating an additive in making the tortilla dough. The additive is epichlorohydrin.

3,690,894
PROCESS FOR PREPARING A DRIED RICE CEREAL PRODUCT

Vincent J. Kelly, Wayne J. Smalligan, and Larry L. Cloud, Fremont, Mich., assignors to Gerber Products Company, Fremont, Mich.

No Drawing. Filed Nov. 3, 1969, Ser. No. 873,667
Int. Cl. A23l *1/10*
U.S. Cl. 99—83 **3 Claims**

A process for obtaining a dehydrated reconstitutable rice cereal by incorporating an ester-containing organic releasing agent containing at least one phosphatide linkage, in a rice cereal slurry prior to dehydration of the slurry surface.

3,690,895
PROCESS FOR PREPARING FOLDED FOOD CHIPS

Roger M. Amadon, Greenville, Ill., and Morris G. Boren, St. Louis, Mo., assignors to Pet Incorporated, St. Louis, Mo.

Filed Sept. 5, 1969, Ser. No. 855,690
Int. Cl. A23l *1/10, 1/12*
U.S. Cl. 99—80 R **4 Claims**

Discrete segments are cut from a sheet of dough and deposited on an endless conveyor chain such that they drape downwardly across the sides of the chain and assume a folding configuration. The segments are heated while on the chain to reduce their moisture content and are thereafter dislodged from the chain and introduced into a frying vat where they are converted into food chips.

3,690,896
PROCESS FOR FORMING A MULTI-COLORED FOOD PRODUCT

Donald L. Maxwell, Minneapolis, Minn., assignor to General Mills, Inc.

No Drawing. Filed May 15, 1970, Ser. No. 37,917
Int. Cl. A23l *1/18*
U.S. Cl. 99—81 **9 Claims**

A process for making a multi-colored food product by introducing at least two different colored dyes into a continuous cooker on an alternate or sequential basis. A product is continuously discharged from the cooker which varies in color from each of the individual colors introduced, to a mixture of the two colors.

3,690,897
Patent Not Issued For This Number

3,690,898
METHOD OF MAKING A FILLED SANDWICH

Anthony S. Partyka, Chicago, Ill., assignor to Kraftco Corporation, New York, N.Y.

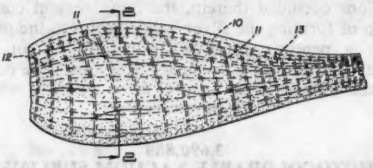
No Drawing. Filed Feb. 9, 1970, Ser. No. 9,962
Int. Cl. A21d *13/00*
U.S. Cl. 99—86 **4 Claims**

A filled sandwich is provided which is suitable for heating in a vertical position without loss of filling. In preparing the sandwich, slices of bread are treated so as to provide a thin layer of hydrocolloid on at least one surface of each slice of bread. Thereafter, a sandwich filling is applied to the treated surface of at least one of the bread slices and the bread slices are formed into a filled sandwich. The hydrocolloid seals the sandwich and prevents loss of filling when the sandwich is heated in a vertical position.

3,690,899
PROCESSING CARP FOR HUMAN CONSUMPTION

Dallas J. Biechele, Jr., Sandusky, Ohio 44870

Filed July 8, 1970, Ser. No. 53,063
Int. Cl. A23l *1/325*
U.S. Cl. 99—111 **4 Claims**



A process of treating carp to eliminate such characteristics as the mud vein, in darkness of meat, and the presence of fine bones, which ordinarily make the carp undesirable for human consumption. The mud vein is removed after cutting to expose it, a cold salt solution leaching operation is used to remove excess blood cells from the tissues which ordinarily give the meat its dark color, and a special scoring operation is used to cut the fine longitudinally extending bones, which cannot be removed by ordinary filleting, so that they will be in such short pieces that they will not be troublesome.

3,690,900
SEASONING COMPOSITIONS CONTAINING 2-(LOWER-ALKOXY) INOSINE-5'-PHOSPHATES

Ryuji Marumoto, Minoo, Yoshio Yoshioka, Osaka, Hisashi Aoki, Suita, and Jun Toda, Nishinomiya, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

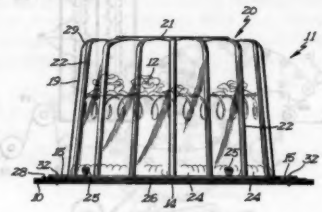
No Drawing. Original application June 26, 1968, Ser. No. 740,094. Divided and this application Apr. 22, 1971, Ser. No. 136,598
Claims priority, application Japan, June 26, 1967, 42/40,899
Int. Cl. A23l *1/26*
U.S. Cl. 99—140 N **17 Claims**

The 2-(lower-alkoxy)inosine-5'-phosphates (2-methoxy-, 2-ethoxy-, 2-n-propoxy- and 2-isopropoxy-inosine-5'-phosphates) have a high capacity for improving the flavor of foods and beverages. Moreover, there is a significant synergistic action therebetween and monosodium glutamate.

3,690,901
CURING OF MEAT AND MEAT CURING PREPARATION THEREFOR
David F. Hinkley, Plainfield, N.J., assignor to Merck & Co., Inc., Rahway, N.J.
No Drawing. Continuation-in-part of application Ser. No. 4,403, Jan. 20, 1970. This application Jan. 12, 1972, Ser. No. 217,243
Int. Cl. A22c *11/00*; A23b *1/02, 3/34*
U.S. Cl. 99—159 6 Claims

Dehydroascorbic acid and dehydroisoascorbic acid are added to meats along with a nitric-oxide producing agent to accelerate the rate of curing.

3,690,902
CAKE PACKAGE
Robert S. Dahl, 5820 82nd Terrace, Pinellas Park, Fla. 33565
Filed Mar. 18, 1970, Ser. No. 20,580
Int. Cl. B65b *25/16*
U.S. Cl. 99—172 7 Claims



A cake cover designed to be detachably secured to a corrugated cake base for packaging a cake therein, the cake cover including a side wall consisting essentially of a plurality of vertically extending small ribs and a plurality of vertically extending large ribs interspersed among said small ribs, both sets of ribs being spaced outwardly from an inner peripheral boundary defined by the intersection of adjacent ribs; and a relatively rigid dome portion designed to enclose a cake mounted on the corrugated cake base, and to be spaced therefrom when the cover is secured to the base.

3,690,903
PRE-FORMED MEAT PACKAGE
Laddie M. Thomka, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Jan. 6, 1970, Ser. No. 892
Int. Cl. B65b *25/06*
U.S. Cl. 99—174 18 Claims

A negative pressure package is provided employing a rigid or semi-rigid clear plastic tub fittable to a self-supporting lid or base member, and adapted to contain weiners or weiner-like products with minimum product deformation and with improved characteristics for retaining a preservative environment within the package. Strategic stacking or positioning of the weiners is permitted by employment of a void filler component strategically located to take up excess space within the package. The filler component optimally comprises a separate film envelope containing a complementary product such as mustard, relish, ketchup, spices or the like. In addition, the tub is provided with various inflection or hinge lines to controllably assist take up of internal package volume lost through slow compression and/or squeezing together of the products during package life, by atmospheric pressure.

3,690,904
CERAMICS PRODUCED FROM SPODUMENE, PETALITE AND CLAY
Earl G. Spangler, Newport Beach, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.
Filed Mar. 20, 1970, Ser. No. 21,361
Int. Cl. C04b *33/00*
U.S. Cl. 106—39 R 7 Claims

A fired ceramic having a nearly zero temperature coefficient of expansion, a hardness of from about 1.0 to 6.75 on the Mohs scale can be formed by firing a composition consisting essentially of at least 10% by weight of the mineral alpha spodumene, at least 10% by weight of petalite and from 10 to 60% by weight of clay.

3,690,905
OPTICAL GLASS HAVING ANOMALOUS PARTIAL DISPERSION
Heinz Bromer, Hermannstein, Norbert Meinert and Johann Spincic, Wetzlar, and Hans Staaden, Stockhausen, Germany, assignors to Ernst Leitz G.m.b.H., Wetzlar, Germany
Filed May 20, 1971, Ser. No. 145,321
Claims priority, application Germany, May 22, 1970, P 20 24 912.1
Int. Cl. C03c *3/08, 3/33, 3/00*
U.S. Cl. 106—47 Q 2 Claims

Novel germanium-containing optical glass compositions having anomalous partial dispersion and improved chemical properties containing glass batch constituents ranging in weight percent: 37–50% of glass formers selected from the group of metal oxides consisting of SiO_2, B_2O_3 and GeO_2; at least 6% of an alkali metal oxide, at least 2% of an oxide selected from the group consisting of ZnO and CdO, up to 13% of an oxide selected from the group consisting of Al_2O_3 and La_2O_3, 3–8% of ZrO_2 and 25–42% of an oxide selected from the group consisting of Ta_2O_5 and/or WO_3 or Nb_2O_5 with at least 20% of the oxide of tantalum being present. The refractive indices (η_e) of such glasses range approximately from 1.646 to 1.733 while the Abbe values (ν_e) range between 44.8 and 37.1 and the partial dispersions ($\Delta\nu_e$) are from −3.0 to −6.4.

3,690,906
CHROME PIGMENTS
Charles Harold Buckley, John Mitchell, and Geoffrey Lionel Collier, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England
No Drawing. Filed Oct. 5, 1970, Ser. No. 78,153
Claims priority, application Great Britain, Oct. 13, 1969, 50,129/69
Int. Cl. C09c *1/20*
U.S. Cl. 106—302 5 Claims

Chrome pigments of improved durability, especially to atmospheric sulphurous acid, are obtained by adding to a stirred aqueous suspension of a chrome pigment at an initial pH between 1.8 and 9.0 a source of silicate ions, a

source of trivalent antimony ions, an alkali metal hydroxide, a polyhydric alcohol and a hydroxyalkylamine and adjusting the pH to between 3.0 and 7.0 by addition of an acidic compound.

3,690,907

METHOD OF PRODUCING CLAY-BASE PIGMENT

Roger D. Kroening, Bay City, and David B. Kirby, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed May 20, 1970, Ser. No. 39,138

Int. Cl. C09c 1/02

U.S. Cl. 106—306 4 Claims

A method of producing a clay-base pigment with improved optical properties which comprises forming an aqueous mixture of clay with an alkaline earth metal hydroxide, e.g. calcium hydroxide, and aging the mixture at elevated temperatures.

3,690,908

HIGH INDEX OPTICAL GLASS

Edgar J. Greco and Gerald E. Blair, Rochester, N.Y., and Guy E. Rindone, State College, Pa., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Oct. 1, 1970, Ser. No. 77,330

Int. Cl. C03c 3/30, 3/02, 3/12

U.S. Cl. 106—47 Q 3 Claims

An optical glass having a high index of refraction and low absorption in the visible region of the spectrum contains as components tellurium dioxide, lanthanum oxide, boron oxide, potassium oxide, tantalum pentoxide, and germanium dioxide.

3,690,909

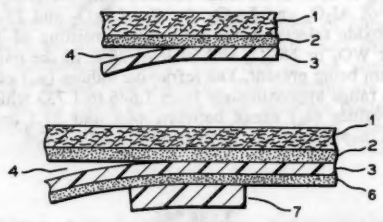
SUPPORTED RELEASABLE POLYOLEFIN FILMS

John G. Finley, Chicago, Ill.
(% Phillips Petroleum Co., Bartlesville, Okla. 74003)

Filed Feb. 27, 1970, Ser. No. 15,119

Int. Cl. B44d 5/00, 1/14

U.S. Cl. 117—6 9 Claims



A strippable release composition is prepared by applying a silicone-alkyd resin to a base substrate, curing the resin, and applying a polyolefin film to the cured resin layer. The film adheres sufficiently to the cured silicone-alkyd resin for further processing, such as for addition of subsequent layers. The film is readily releasable from the silicone-alkyd resin without distortion of either substrate, film, or subsequently added layers.

3,690,910

COATING PROCESS FOR REGENERATED CELLULOSE FILM

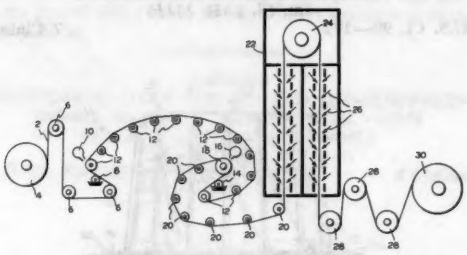
Yves Mahe, Mantes-la-Jolie, Gilbert Letourneur, Mantes-la-Ville, and Jean-Luc Devillas, Mantes-la-Jolie, France, assignors to La Cellophane Societe Anonyme, Paris, France

Continuation-in-part of abandoned application Ser. No. 544,219, Apr. 21, 1966. This application Jan. 19, 1971, Ser. No. 107,775

Claims priority, application France, May 4, 1965, 15,623

Int. Cl. B44d 1/16

U.S. Cl. 117—7 6 Claims



A process for coating a water-absorbent support, e.g., regenerated cellulose films, with an aqueous solution or dispersion whereby the support poses little or no tendency to roll up upon itself, which comprises coating the support with such aqueous solution or dispersion along its entire width on both faces successively and without intermediate drying, the support, after being coated on one face traveling over a supported path which is of sufficient length to permit the deposited coating to reach a degree of coalescence so that the coating will not be altered by passage of a detour roll; coating the second face while allowing coalescence thereof in substantially the same manner, and drying the coated support.

3,690,911

PROCESS FOR PREPARING SYNTHETIC SUEDE SHEETS

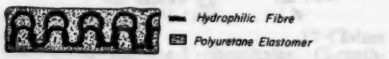
Hiroshi Endo, Tokyo, Kazuo Tokoyoda, Funabashi, and Takemi Fujiyu, Yasuaki Kayasuga, and Tokio Kunii, Tokyo, Japan, assignors to Suehiro Sen-I Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 22, 1970, Ser. No. 30,760

Claims priority, application Japan, June 30, 1969, 44/51,373

Int. Cl. B29j 1/04; D06n 3/14

U.S. Cl. 117—17 6 Claims



A thin, flexible, soft and tough synthetic suede sheet comprising a homogeneous unitary structure of a napped

knitted fabric containing at least 50% of hydrophilic fibers and 30 to 50% by weight of a microporous polyurethane resin impregnated in the knitted fabric is prepared by treating the napped knitted fabric with a low concentration resin solution in a solvent soluble in water, adjusting the resin content in the fabric to 30 to 50% by weight, passing the fabric through a bath of cold water to remove the solvent and cause the resin to coagulate thus forming said composite structure, drying the composite structure at a temperature of 138° C. to 162° C. to set the resin and polishing the dried composite structure.

3,690,912

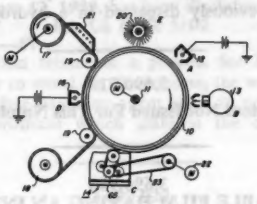
METHOD FOR MAGNETIC DEVELOPMENT OF LATENT ELECTROSTATIC IMAGES

Larry W. Nuzum, 429 Mayfair Blvd., Columbus, Ohio 43213

Original application Aug. 7, 1968, Ser. No. 750,852, now Patent No. 3,570,453. Divided and this application June 4, 1970, Ser. No. 57,408

Int. Cl. G03g *13/08, 15/08*

U.S. Cl. 117—17.5 **1 Claim**



This is a method for magnetic development of latent electrostatic images wherein development can be rapidly started and stopped by moving the magnet member relative to the roll member from a first position in which development occurs to a second position displacing the magnetic flux field and bristle-like formation of developer material away from the images on the photoconductive surface, and simultaneously moving a plate member from a first position spaced from the roll member during development to a second position into close proximity and in overlying relationship with the roll member where the magnetic member is displaced away from its first position to its second position to break down any bristles of developer material and prevent unwanted spurious development of images.

3,690,913

PROCESS FOR THE CONTINUOUS DEPOSITION OF A PROTECTIVE LAYER ON FORGED, ROLLED OR FOUNDRY PRODUCTS

Georges Schaumburg, 1-bis, Rue de Londres, Montigny-les-Metz, Moselle, France

No Drawing. Continuation-in-part of application Ser. No. 714,419, Mar. 20, 1968. This application Nov. 9, 1970, Ser. No. 88,211

Claims priority, application France, Mar. 31, 1967, 48,483

Int. Cl. C23d *3/00*

U.S. Cl. 117—23 **9 Claims**

Metallic forged, rolled or foundry products are deoxidized or descaled by applying to such products, while they are hot, a suitable reducing agent and, while the products are maintained in a heated state, applying a protective agent, capable of existing in different physical, chemical or electrical states. The reducing agent may be a boron, phosphorus, silicon or aluminum derivative. The protective agent may be a metal such as a ferro metal such as ferro-manganese, ferro-silicon, an oxide or a mineral or chemical product and may be projected onto the product in powder form. It may form a chemical or alloy bond with the base metal of the product to form an oxidation- or corrosion-resistant coating.

3,690,914

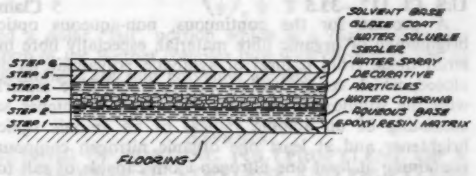
METHOD OF FORMING SEAMLESS FLOORING

Mitchell Andreski, 32 Barbonsel Road, East Hartford, Conn. 06118

Continuation of abandoned application Ser. No. 676,460, Oct. 19, 1967. This application Mar. 18, 1971, Ser. No. 125,864

Int. Cl. B44d *1/02*

U.S. Cl. 117—26 **11 Claims**



Seamless surface coverings, e.g. seamless floor coverings with a markedly reduced incidence of surface protrusions through the resinous overlayer from projecting decorative particles are disclosed to be obtainable by spraying the particles which have been randomly deposited onto the base coat or matrix with water to wet the particles and thus decrease the number and protrusion extent of projecting particles.

3,690,915

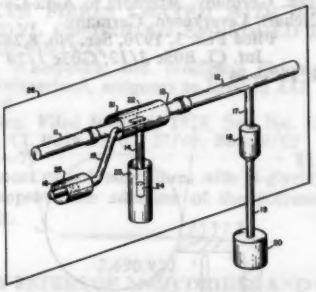
METHOD OF FORMING GALLIUM PHOSPHIDE COATINGS

John E. Davey, Alexandria, Va., and Titus Pankey, Jr., Washington, D.C., assignors to the United States of America as represented by the Secretary of the Navy

Filed Dec. 16, 1969, Ser. No. 885,572

Int. Cl. B29d *11/00*; C03c *17/00*

U.S. Cl. 117—33.3 **10 Claims**



Gallium phosphide (GaP) films evaporated onto amorphous or crystalline substrates held at a particular temperature from that of separate sources of Ga and P, each held at a particular temperature exhibit an optical absorption edge shift from a bulk position of 2.34 ev., down to about 0.8 ev. By appropriate deposition of GaP films onto a substrate and/or by vacuum-annealing of films so deposited, the optical absorption edge can be shifted to any position between 0.8 ev. and 2.34 ev. Thus, GaP

films may be deposited and then properly annealed to provide films that cover the entire absorption spectrum of the III–V compounds (with the exception of InAs and InSb) plus Ge and Si. Such films may be used as optical filters of variable index of refraction and extinction coefficient to cover the entire range of energies between 0.8 and 2.34 ev.

3,690,916

PROCESS FOR THE CONTINUOUS OPTICAL BRIGHTENING OF ORGANIC FIBRE MATERIAL

Hans Wegmuller, Riehen, Alois Kleemann, Basel, and Rudolf Keller, Riehen, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Apr. 6, 1970, Ser. No. 26,166
Claims priority, application Switzerland, Apr. 11, 1969, 5,524/69
Int. Cl. C09k *1/02*
U.S. Cl. 117—33.5 T **9 Claims**

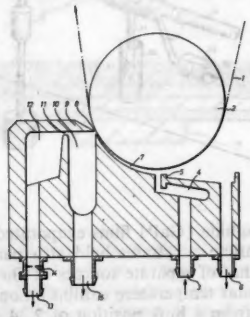
A process for the continuous, non-aqueous optical brightening of organic fibre material, especially fibre material made from natural or synthetic polyamide, is disclosed, which comprises impregnating said fibre material with the solution of at least one optical brightener salt consisting of an anionic radical of an anionic optical brightener and at least one organic nitrogen compound containing at least one nitrogen atom capable of salt formation, in a solvent or solvent mixture, the solvent or solvent mixture consisting of unsubstituted or halogenated hydrocarbon boiling between 50 and 150° C., and, optionally, liquid, water-soluble organic solvent boiling below 220° C., removing excess solvent from the material and finishing the brightening by a heat treatment of the impregnated fibre material at temperatures below the softening point of said fibre material. By this process, on the stated fibre material very effective and even optical brightenings having good fastness properties, such as fastness to dry cleaning and washing, are obtained.

3,690,917

SUCTION SYSTEM AND PROCESS FOR COATING ARRANGEMENTS AVOIDING THE TRANSMISSION OF PRESSURE DIFFERENCES TO THE COATING OPERATION

Peter Herzhoff and Stephan Platz, Leverkusen, and Hans Gref, Cologne-Stammheim, Germany, Willi Schwenger, Aranjuez, Madrid, Spain, and Fritz Maus, Cologne-Flittard, Wolfgang Schweicher, Günther Koepke, and Willi Wasser, Leverkusen, and Kurt Browatzki, Opladen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 3, 1970, Ser. No. 8,262
Int. Cl. B05c *3/12*; G03c *1/74*
U.S. Cl. 117—34 **2 Claims**



A photographic web is coated with a photographic emulsion under a roller and the final thickness of the coating is effected by an air stream blown tangentially over the coating into a vacuum chamber. Fluctuations in the air stream are prevented by subjecting the air stream discharged from the vacuum chamber to a sudden restriction in its cross sectional area by passing it through an apertured diaphragm. This abruptly changes its pressure in the ratio of at least 2:1 and obtains relatively high air velocity in the aperture in the sonic region.

3,690,918

PHOTOGRAPHIC ELEMENT AND PROCESS

Warren J. Miller, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Mar. 19, 1970, Ser. No. 21,174
Int. Cl. B44d *1/02*; G03c *1/00*
U.S. Cl. 117—34 **12 Claims**

Photographic elements incorporating an electrically insulating support having coated thereon at least one radiation-sensitive silver salt layer can be prepared with little or no hydrophilic colloid binder by the electrostatic deposition of dispersed preformed, radiation-sensitive silver salt crystals from a fluid medium, which electrostatic coating process can also be used to deposit such silver salt crystals including silver-dye complex crystals which have been previously dispersed in a hydrophilic colloid binder.

3,690,919

Patent Not Issued For This Number

3,690,920

LAMINABLE FILM HAVING AN INTEGRAL GLUTINOUS GROUND COATING

Pasco R. Santurri, 828 Clayton Road 63105, and John H. Rother, 6 Canterbury 63117, both of St. Louis, Mo.

No Drawing. Continuation-in-part of application Ser. No. 670,400, Sept. 25, 1967. This application June 3, 1970, Ser. No. 43,190
Int. Cl. B44d *1/10, 1/12, 1/14*
U.S. Cl. 117—45 **14 Claims**

A polyvinylchloride film having a decorative imprint on one face thereof, and a ground coat provided on said decorative imprint to present a background therefor and having bonding properties, being laminable to a suitable rigid substrate preferably of cellulosic character such as plywood, hardboard, flakeboard, etc. The ground coat is normally nontacky permitting storing of the film in roll form pending usage, and comprising essentially pigmented resin emulsion, and a plasticizer providing an eutectic mixture adapted for softening within the range of 200–225° F. for bonding to the substrate in minimum nip time providing a minimum bond strength of 3 to 5 p.s.i. at 180° angle pull being applied to the film in a density of about 10 pounds for each 3000 square feet of film.

3,690,921

METHOD FOR STRONGLY ADHERING A METAL FILM ON CERAMIC SUBSTRATES

Glenn V. Elmore, Vestal, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

No Drawing. Filed Dec. 7, 1970, Ser. No. 95,940
Int. Cl. C23c *3/02*; C04b *41/38*
U.S. Cl. 117—54 **9 Claims**

A method for metal plating ceramic substrates is provided. A ceramic substrate is prepared for metal plating by cleaning the substrate with a hot cleaning alkaline solution, rinsing with water, immersing the substrate in concentrated alkali metal hydroxide solution and heating to a temperature sufficient to remove water from the solution and thereby depositing the solid alkali metal hydroxide

on the surface. Further heating the substrate to a temperature above the melting point of the deposited alkali metal hydroxide for a time sufficient to cause the molten alkali metal hydroxide to alter the surface by etching of both the Al_2O_3 and the binder in the substrate and thereafter cooling, rinsing and neutralizing the alkali metal hydroxide. Alternately, the cleaned dry substrate may be directly immersed in molten alkali metal hydroxide and rinsed in the same manner as before. The so-treated substrate may then be subjected to an electroless deposition bath for metal plating thereon. The resultant metal film is found to be strongly bonded to the ceramic substrate.

3,690,922

CONDITIONING OF WOOD TO STABILISE ITS COLOUR

Stephen Dombay, Stevenage, England, assignor to Furniture Industry Research Association, Stevenage, England

No Drawing. Continuation-in-part of application Ser. No. 687,464, Dec. 4, 1967. This application Sept. 1, 1970, Ser. No. 68,781

Claims priority, application Great Britain, Dec. 8, 1966, 55,026/66

The portion of the term of the patent subsequent to Jan. 12, 1988, has been disclaimed

Int. Cl. B27k *5/02*

U.S. Cl. 117—57 **19 Claims**

The invention relates to a process for imparting stabilized colour to wood. In the process, the wood is treated with a persulfate oxidising agent so as to produce therein light-stable products which stabilise the colour of the wood.

3,690,923

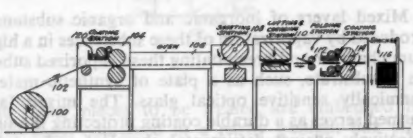
FROZEN FISH PACKAGE

Alexander McIntosh Vessie, Lachute, Quebec, Canada, assignor to The Price Company Limited, Quebec, Quebec, Canada

Filed Feb. 12, 1970, Ser. No. 10,890

Int. Cl. B05c *9/04;* **C09d** *5/00*

U.S. Cl. 117—68 **9 Claims**



A packaging folder formed from a fibrous board having a porosity in the range of 300 to 650 seconds measured on a Gurley densometer and coated on one surface with a release coating permeable to air but substantially preventing penetration of water into the board and preferably coated on the other surface with a wax coating impervious to water and water vapour.

3,690,924

PRESSURE SENSITIVE ADHESIVE ARTICLES HAVING A RELEASE COATING

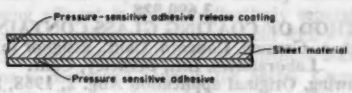
Phillip W. Estes, Groveton, N.H., assignor to W. R. Grace & Co., Cambridge, Mass.

Filed Oct. 5, 1970, Ser. No. 77,795

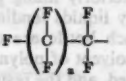
Int. Cl. C09j *7/04*

U.S. Cl. 117—68.5 **3 Claims**

A pressure-sensitive adhesive coated article, such as a tape, having a release coating with superior organic solvent and water resistance on side opposite the adhesive coating comprising a water soluble, organic solvent-insoluble film forming polymer, e.g. polyvinyl alcohol, as the



major component, a fluorochemical containing a nonpolar "head" portion of the structure



and a polar "tail" portion which is a carboxylic acido group of the Werner complex type with chromium and an insolubilizer for said polyvinyl alcohol.

3,690,925

METHOD OF BONDING POLYPROPYLENE OR A COPOLYMER OF ETHYLENE AND PROPYLENE TO AN ELASTOMER

Raymond J. T. Morris, Solihull, England, assignor to Dunlop Holdings Limited, London, England

No Drawing. Filed June 8, 1970, Ser. No. 44,615

Claims priority, application Great Britain, June 17, 1969, 30,552/69

Int. Cl. B32b *27/32*

U.S. Cl. 117—76 T **6 Claims**

A method of modifying a polyalkene which comprises applying to the surface of the polyalkene a solution containing 0.025 to 10 percent by weight of a polyalkene which is the same or different from the polyalkene to be treated. Examples of suitable polyalkenes which may be modified include polypropylene and propylene/ethylene copolymers. Suitable solvents for forming the solution of the polyalkene include white spirits, paraffin, heavy coal tar naphtha, toluene and xylene. The modified surface of the polyalkene may be bonded to an elastomer such as natural rubber, styrene butadiene copolymer rubbers and acrylonitrile rubbers.

3,690,926

POLYESTER FIBRES COATED WITH AN N-GLYCIDYL COMPOUND EMBEDDED IN A RUBBER MATRIX

Matthias J. Wampetich and Wolfgang Griehl, Chur, Grisons, Switzerland, assignors to Inventa AG, Zurich, Switzerland

No Drawing. Filed June 11, 1970, Ser. No. 45,548

Int. Cl. B32b *27/02, 27/06;* **B60c** *9/02*

U.S. Cl. 117—77 **11 Claims**

The treatment of polyester fibres with N-glycidyl compounds to improve the adhesion of the polyester to a rubber matrix.

3,690,927

ACRYLOXY ESTERS OF ANHYDRIDES AND COATING COMPOSITIONS DERIVED THEREFROM

Gordon M. Parker, Harwick, and Raymond C. Heuser, Arnold, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Filed July 17, 1969, Ser. No. 842,717

Int. Cl. B44d *1/50*

U.S. Cl. 117—93.31 **30 Claims**

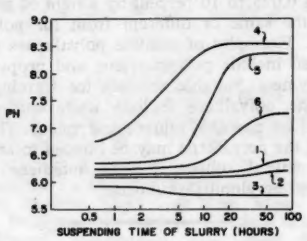
This invention relates to acryloxy (or methacryloxy)-alkyl (or alkyloxyalkyl) organic dicarboxylic esters prepared by reacting an organic anhydride with a hydroxyalkyl acrylate (or methacrylate) and then reacting this half-ester with a terminally-saturated glycidyl ether or

ester. These compounds are useful in coating compositions and are particularly useful in coating compositions curable by radiation.

3,690,928
METHOD OF COATING GLASS CONTAINERS
Raleigh A. Carmen, Concord, Calif., assignor to Cutter Laboratories, Inc., Berkeley, Calif.
No Drawing. Original application Aug. 2, 1968, Ser. No. 749,790, now Patent No. 3,598,269, dated Aug. 10, 1971. Divided and this application July 24, 1970, Ser. No. 64,854
Int. Cl. B44d *1/02, 1/06*
U.S. Cl. 117—97 4 Claims

A method for interiorly lining glass bottles to protect them from attack by liquids tending to attack glass. The interior walls of each bottle are coated with a solution in a volatile liquid solvent of polymer, the bottle drained, the solvent evaporated, and the resulting lining heat-cured. This especially applies to the use of a solution of polyvinyl chloride in a volatile liquid solvent containing an organic coupling agent.

3,690,929
STABILIZATION OF PHOSPHOR SLURRIES
Yoshiyuki Yokota, 1506 Shinshiku; and Takashi Miyagawa, 1268 Karaoka, both of Hiratsuka-shi, Kanagawa-ken, Japan; Yasuto Tanaka, 2–38 Misono, Ota-ku, Tokyo, Japan; and Tatuki Torii, 668 Kamonomiya, Odawara-shi, Kanagawa-ken, Japan
Continuation-in-part of application Ser. No. 573,635, Aug. 19, 1966. This application Jan. 15, 1970, Ser. No. 3,144
Int. Cl. B44d *1/02, 5/00*
U.S. Cl. 117—100 B 2 Claims



The photosensitive properties and stability of phosphor slurries used in photoprinting are improved by making a slightly soluble acidic oxide co-exist with a phosphor adapted for being applied to the inner surface of a cathode ray tube substantially in close contact with the surface of the phosphor particles, said acidic oxide being oxides of at least one element selected from the group consisting of boron, vanadium, gallium, germanium, arsenic, niobium, molybdenum, antimony, tantalum and tungsten.

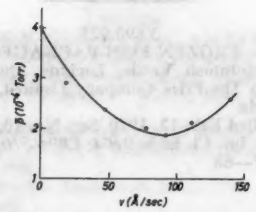
3,690,930
METHOD OF PROTECTING REDUCED IRON ORE BY COATING
David E. Mueller and Marnell A. Segura, Baton Rouge, La., assignors to Esso Research and Engineering Company
No Drawing. Filed July 13, 1970, Ser. No. 54,583
Int. Cl. C21b *1/00*
U.S. Cl. 117—100 B 7 Claims

Reduced metals are protected for prolonged periods against back oxidation and water absorption by coating the metal with a composition comprising a bituminous material and from about 1 to about 40 wt. percent of an alkaline earth metal oxide, hydroxide or mixtures thereof to deposit thereon up to about 0.5 wt. percent of the bituminous material and the alkaline earth metal compound.

3,690,931
PARTICLED UREA COATED WITH MAGNESIUM DODECYL BENZENE SULFONATE
John J. Jasnosz, Jr., Santa Ana, Calif., assignor to Petrochemicals, Inc., Fort Worth, Tex.
No Drawing. Continuation of abandoned application Ser. No. 758,128, Sept. 6, 1968. This application Mar. 4, 1971, Ser. No. 121,198
Int. Cl. C05c *9/00*; B44d *1/094*
U.S. Cl. 117—100 A 1 Claim

Particled urea coated with magnesium dodecyl benzene sulfonate in amounts of 0.025 to 0.15 percent by weight of the urea does not substantially cake on standing. Other compounds may also be used, but with less effectiveness.

3,690,932
METHOD FOR PRODUCING MIXED LAYERS FROM INORGANIC AND ORGANIC SUBSTANCES ON A SUBSTRATE
Walter Geffcken and Volker Paquet, Mainz, Germany, assignors to JENAer Glaswerk Schott & Gen., Mainz, Germany
Filed Nov. 14, 1969, Ser. No. 876,945
Claims priority, application Germany, Nov. 20, 1968, P 18 09 906.4; Oct. 28, 1969, P 19 54 083.1
Int. Cl. C23c *11/00, 17/00*
U.S. Cl. 117—106 R 20 Claims

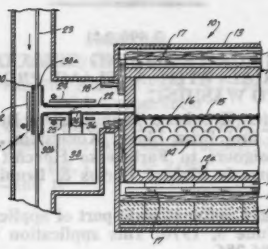


Mixed layers of inorganic and organic substances are produced by vaporization of these substances in a high vacuum chamber and precipitating these vaporized substances on a substrate, such as a plate of synthetic material or chemically sensitive optical glass. The mixed layer so formed serves as a durable coating protecting the substrate effectively against detrimental chemical and mechanical influences.

3,690,933
APPARATUS AND METHOD FOR CONTINUOUSLY CONDENSING METAL VAPOR UPON A SUBSTRATE
Frank J. Cole, Parma, Ohio, assignor to Republic Steel Corporation, Cleveland, Ohio
Filed May 21, 1970, Ser. No. 39,379
Int. Cl. C23c *11/00, 13/00*
U.S. Cl. 117—107.1 8 Claims

Apparatus and method for continously condensing metal vapor upon a moving substrate includes generating a continuous quantity of metal vapor, which may be at nonturbulent flow. The metal vapor is directed by a nozzle from the metal vaporizing apparatus toward the substrate at turbulent flow. A chamber in which the substrate continuously moves communicates with the nozzle so as to receive from the nozzle the metal vapor to be deposited upon the substrate. The chamber and the nozzle are maintained at a temperature equal to or in excess of the temperature of the metal vapor to prevent substantial deposition of the vapor upon the walls of the nozzle

and the chamber. The substrate is at a temperature substantially less than that of the metal vapor. The flow of



metal vapor may be controlled by a valve in the nozzle which divides excess vapor from the flow and directs the excess vapor into a collector box.

3,690,934

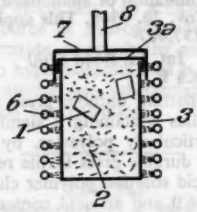
METHOD OF FORMING CHROMIUM AND ALUMINUM DIFFUSION ALLOYS ON METAL PIECES

Philippe Marie Galmiche, Clamart, and Andre Hivert, Pontoise, France, assignors to Office National d'Etudes et de Recherches Aerospatiales (par abreviation O.N.E.R.A.), Chatillon-sous-Bagneux, France

Continuation-in-part of abandoned application Ser. No. 594,239, Nov. 14, 1966. This application July 1, 1970, Ser. No. 51,726

Int. Cl. C23c *11/00, 13/00, 17/02*

U.S. Cl. 117—107.2 P **19 Claims**



The metal pieces to be treated are embedded in a reactive mass contained in a partly gastight box placed in a heating vessel wherein there is an at least partly hydrogenated protective atmosphere. The reactive mass comprises an intimate mixture of (1) a powder alloy of chromium and aluminum, (2) an inert powdered diluting component and (3) a halogen-containing component. The box and its contents are heated to 1050° C.–1100° C. for a few hours, then cooled. The starting chromium powder for the chromium-aluminum alloy powder may be of either magnesothermic or electrolytic origin and at least the electrolytic chromium is subjected to at least one pretreatment, prior to alloying, by exposure to either magnesium or calcium vapor to substantially reduce the amount of free oxygen on and in the chromium grains.

3,690,935

SYSTEM FOR WET IMPACT PLATING

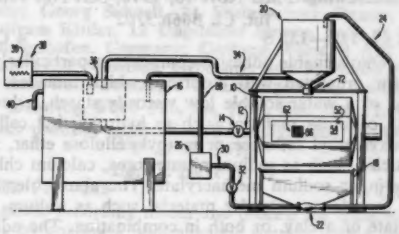
Lester Coch, Northport, N.Y., assignor to Waldes Kohinoor, Inc., Long Island, N.Y.

Filed July 8, 1970, Ser. No. 53,123

Int. Cl. B05c *3/08, 11/10;* **B44d** *1/34*

U.S. Cl. 117—109 **15 Claims**

A system for wet impact plating of metal parts utilizing a single tumbling barrel for independent parts rinsing and impacting operations respectively when interchangeable, smaller perforate and imperforate barrel doors are secured to a larger door of the barrel. Rinsing water is supplied to the barrel while rotating with the perforate door in position. Water expenditure is thereby minimized and the rinsing effluent is thereby effectively separated from the impacting medium. A stationary bin with a screen for separating parts from the impacting medium and aqueous solutions is positioned beneath the barrel. Communicating with the bin in selectively operable relationship is a venturi eductor which, together with a pump communicating with a water storage tank, is operable to rapidly



transfer the impacting medium to a hopper positioned over the barrel for reuse while generating sufficient turbulence to tend to cleanse the impacting medium of spent plating material and promoter chemicals. These spent materials pass, with overflow water, through an overflow strainer in the hopper to the water storage tank where they settle and are subsequently removed. Substantially all water is thereby recovered and reused, and the frequency of impacting medium rectification is materially lessened. Two separate charges of impacting medium are used in the system, and several tumbling barrel units may be supported by a single water storage tank where the water level and temperature are controlled.

3,690,936

ADHESIVE MATERIAL FOR BONDING VINYL CHLORIDE POLYMERS TO SUBSTRATES

Richard C. Doss and Faber B. Jones, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Feb. 2, 1970, Ser. No. 8,074

Int. Cl. C09j *7/02*

U.S. Cl. 117—122 H **4 Claims**

Film materials of vinyl chloride polymers are contacted with a solution or dispersion of a dry-film forming, heat-activatable adhesive material comprising a blend of an ethylene-vinyl acetate copolymer, a polyamide, and a tackifier; dry adhesive coated film is thereafter heat activated and bonded to substrates.

3,690,937

PROCESS OF MAKING A PRESSURE-SENSITIVE ADHESIVE MATERIAL

Gunter Guse and Hanns G. Pietsch, Hamburg, Germany, assignors to Beiersdorf Aktiengesellschaft, Hamburg, Germany

No Drawing. Filed Aug. 3, 1970, Ser. No. 60,629

Claims priority, application Germany, Aug. 8, 1969, P 19 40 549.3

Int. Cl. C09j *7/02*

U.S. Cl. 117—122 P **11 Claims**

A pressure sensitive adhesive material is made by coating a substrate with a copolymer of specified proportions of a diester of fumaric acid, and a vinyl compound copolymerisable therewith as well as either or both of an

olefinically unsaturated copolymerisable polar compound with carboxyl, carboxamide, dicarboxylic anhydride or dicarboximide groups, and an olefinically unsaturated copolymerisable compound with self-crosslinkable reactive groups, together with a cross-linking polyfunctional compound, and subjecting the coating thereon to a short period heat treatment.

3,690,938

REMOISTENABLE ADHESIVE COMPOSITION FOR PREPASTED WALL COVERINGS

Thomas G. Swift, Decatur, Ill., assignor to A. E. Staley Manufacturing Company, Decatur, Ill.

No Drawing. Filed Nov. 18, 1970, Ser. No. 90,862

Int. Cl. B66b *3/02*

U.S. Cl. 117—122 S **4 Claims**

A remoistenable adhesive composition particularly useful for prepasted wall coverings which includes a dry blend of a water soluble low viscosity starch, a low viscosity cellulose material such as hydroxyethyl cellulose, carboxymethyl cellulose or methyl cellulose ether, and a plasticizer such as sodium nitrate, urea, calcium chloride, glycerin or sodium methacrylate. The above blend may also include an extender material such as sodium methacrylate or a clay, or both in combination. The adhesive is not disturbed by further handling and can be applied to the wall covering either before or after printing the decorative surface. The wall coverings treated with this adhesive are easily applied when remoistened, because they have good "slip" properties. They are also easily removed after installation without the use of steam or other stripping agents, simply by pulling the covering away from the undersurface.

3,690,939

PROCESS FOR THE COATING OF TEXTILES

Jacques Wegmann, Bettingen, Basel, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Nov. 23, 1970, Ser. No. 92,234

Int. Cl. B32b *15/02, 17/04, 27/02*

U.S. Cl. 117—126 GB **7 Claims**

Process for coating of textile flat-shaped articles which comprises impregnating the articles with a solution or dispersion containing an epoxy compound, a thio compound containing a

group bound to at least one nitrogen atom and a high polymeric material. After impregnation, the coating is affixed to the substrate either in wet or dry state.

3,690,940

PREVENTING RUSTING OF STEEL SHEETS COATED WITH AQUEOUS SLURRY OF METAL POWDER

Hidehisa Yamagishi, Fumitoshi Yokoi, and Tadao Takahashi, Kawasaki, Japan, assignors to Nippon Kokan Kabushiki Kaisha

Filed Nov. 17, 1970, Ser. No. 90,379

Claims priority, application Japan, Nov. 21, 1969, 44/93,141

Int. Cl. B22f *7/04;* **C23c** *17/00*

U.S. Cl. 117—131 **2 Claims**

In coating steel sheet with aqueous slurry of metal powder, the slurry is added with corrosion inhibitor to prevent rusting of steel sheet at the time of drying the coating layer thereby improving the adhesion thereof to the steel surface, said corrosion inhibitor addition being a compound containing any one of such negative ions as NO_2^-, MoO_4^{--} or $C_6H_5COO^-$ in a concentration ranging from 10^{-5} mol/l. to 10^{-1} mol/l.

3,690,941

PROCESS FOR PROVIDING CELLULOSE FIBRE MATERIAL WITH A FLAME-PROOF FINISH FAST TO WASHING

Martin Reuter, Kronberg, Taunus, Claus Beermann, Neu-Isenburg, and Fritz Linke, Konigstein, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Continuation-in-part of application Ser. No. 43,192, June 3, 1970. This application Dec. 8, 1970, Ser. No. 96,286

Claims priority, application Germany, Aug. 29, 1970, P 20 42 949.6

Int. Cl. C09k *3/28;* **D06m** *13/28*

U.S. Cl. 117—136 **9 Claims**

Cellulose fiber materials are rendered flame proof and fast to washing by (a) impregnation with aqueous bath containing phosphoric acid esters with N-methylol groups and, optionally, aminoplast precondensates and/or aminoplast condensation catalysts, and (b) a subsequent heat treatment.

3,690,942

STAIN RELEASE AND DURABLE PRESS FINISHING USING SOLUTION POLYMERS

Joseph K. Vandermaas, Charlotte, Larry J. Rikard, Lowell, Robert K. Dunlap, Charlotte, and James F. Lavender, Gastonia, N.C., assignors to Celanese Corporation, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 777,505, Nov. 20, 1968. This application Apr. 23, 1971, Ser. No. 137,067

Int. Cl. B44d *5/00*

U.S. Cl. 117—138.8 F **5 Claims**

Process for imparting durable press and soil release properties to textiles containing a significant man-made fiber content, particularly polyester, by treatment in a bath containing a durable press textile resin, textile resin catalyst and an acid solution polymer characterized by a pH below about 6.0 and an acid content of at least 20 weight percent calculated as acrylic acid. Low molecular weight, non-fiber-forming, hydrophilic polyesters synergize the activity of the acid solution polymer.

3,690,943

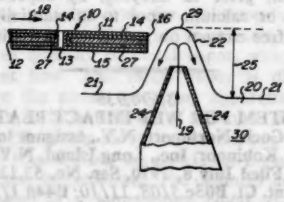
METHOD OF ALLOYING TWO METALS

Francis John Papiano, Cranbury, N.J., assignor to RCA Corporation

Filed Apr. 24, 1970, Ser. No. 31,600

Int. Cl. B44d *1/18*

U.S. Cl. 117—212 **15 Claims**



Two metals are alloyed by a method wherein the metals are coated on a surface which is passed through

a standing wave of a heat transfer fluid to melt only the coating. Upon cooling, the two metals form a solid alloy on the surface.

3,690,944

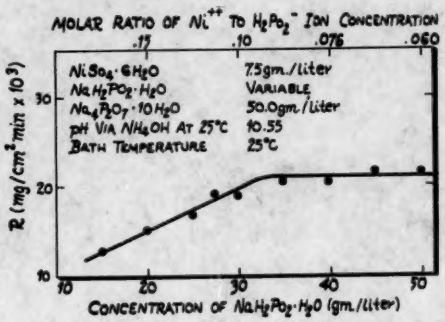
ELECTROLESS NICKEL PLATING METHOD

Nathan Feldstein, Kendall Park, N.J., assignor to RCA Corporation

Continuation of application Ser. No. 706,822, Feb. 20, 1968. This application Mar. 10, 1970, Ser. No. 17,041

Int. Cl. C23c *3/02*

U.S. Cl. 117—160 R 6 Claims



A method for electrolessly plating nickel from a bath comprising (i) a nickel salt; (ii) a nickel ion complexing agent; (iii) a source of hydrophosphite ions; and (iv) ammonium hydroxide, in which the molar concentration ratio of nickel to hypophosphite ions is less than 0.2. The bath exhibits a plating rate substantially independent of hypophosphite ion concentration.

3,690,945

METHOD OF PRODUCING A TRANSISTOR WITH AN INSULATED CONTROL ELECTRODE

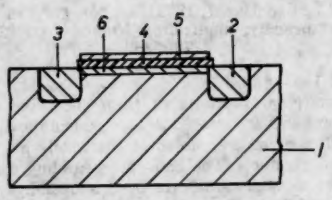
Max Kuisl, Ay (Iller), Germany, assignor to Licentia, Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Apr. 27, 1970, Ser. No. 32,156

Claims priority, application Germany, May 7, 1969, P 19 23 265.6

Int. Cl. H01l *7/34*

U.S. Cl. 117—215 4 Claims



A method of producing a transistor with an insulated control electrode comprises applying to a silicon semiconductor body an oxygen permeable insulating layer which does not consist of a silicon oxide for the control electrode, and thereafter tempering the semiconductor body in an atmosphere of oxygen to produce a silicon dioxide layer at the phase border between the insulating layer and the silicon body.

3,690,946

MANUFACTURE OF MAGNETIC RECORDING MEDIA

Heinrich Hartmann, 46 Weinheimer Strasse, 6703 Limburgerhof, Germany; Job-Werner Hartmann, 1 Frankenstrasse, 6700 Ludwigshafen, Germany; Hans Wilhelm, 25 Nachtigallenweg, 6951 Heinsheim, Germany; Georg Schnell, 21 Freinsheimer Strasse; and Wolfram Kittler, 12 Ungsteiner Strasse, both of 6700 Ludwigshafen, Germany; Gerhard Werst, 8 Auf dem Sand, 6730 Neustadt, Germany; and Reinhold Baur, 4a Rene-Bohn-Strasse, 6700 Ludwigshafen, Germany

No Drawing. Filed Feb. 16, 1970, Ser. No. 11,818

Claims priority, application Germany, Feb. 18, 1969, P 19 07 957.3

Int. Cl. H01f *10/02*

U.S. Cl. 117—235 6 Claims

Magnetic recording media and process for their manufacture by coating a non-magnetic support with a dispersion of magnetic pigment in a binder based on a reactive mixture of (A) a polyisocyanate and (B) a hydroxyl group-containing copolymer prepared by solution polymerization from (1) hydroxyalkyl acrylate or methacrylate, (2) alkyl acrylate or methacrylate, (3) vinylidene chloride and, if desired, (4) a further monomer, such as acrylonitrile, in certain proportions, and curing the applied coating.

3,690,947

PROCESS FOR THE OPTICAL BRIGHTENING OF FIBROUS MATERIALS MADE FROM POLYACRYLONITRILE

Gunter Rosch, Altenhain, Taunus, Werner Linke, Sulzbach, Taunus, Otto Smerz, Kelkheim, Taunus, and Erich Schinzel, Hofheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Jan. 21, 1970, Ser. No. 4,746

Claims priority, application Germany, Jan. 30, 1969, P 19 04 424.7

Int. Cl. C09k *1/02*

U.S. Cl. 117—33.5 T 11 Claims

Fibrous materials made of polymers containing at least 85% of polyacrylonitrile can be optically brightened in a said material with a liquor containing a 1-(4'-β-alkoxyethyl sulfonyl)-phenyl-3-p-chlorophenyl-Δ^2-pyrazoline, adjusting the impregnated material to a liquor content of about 5 to 120% by weight, referred to the dry-weight of the goods, and heating it for about 2 seconds to 30 minutes to a temperature of about 100 to 150° C.

3,690,948

PROCESS OF MAKING HIGH D.E. FRUCTOSE CONTAINING SYRUPS

Edward Katz, St. Louis, Irving Ehrenthal, University City, and Barrett L. Scallet, Clayton, Mo., assignors to Anheuser-Busch, Incorporated, St. Louis, Mo.

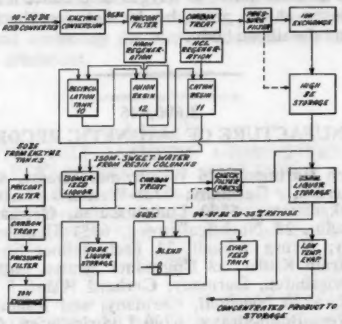
Filed Aug. 31, 1970, Ser. No. 68,125

Int. Cl. C13k *9/00*

U.S. Cl. 127—46 A 12 Claims

A line of fructose-containing, water white, ash-free, high D.E. syrups is made by resin isomerization utilizing

a macroreticular resin in the OH^- form. The high dextrose (95%) feed is recirculated through a strong base



anion macroreticular resin column and then passed through a strong acid cation column.

3,690,949

ALKALINE BATH FOR NONETCHING REMOVAL OF SCALE FROM TITANIUM WORKPIECES

Daniel Y. Ng, Brooklyn, N.Y., assignor to Purex Corporation, Ltd., Lakewood, Calif.

No Drawing. Filed Oct. 26, 1970, Ser. No. 84,110
Int. Cl. C23g *1/22*
U.S. Cl. 134—2 **16 Claims**

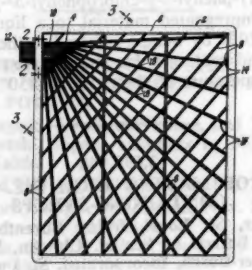
Titanium scale, generally comprising oxides and nitrides of titanium, may be removed from titanium workpieces without simultaneously rapidly etching the workpiece by subjecting the workpiece to a solution in water of from 2 to 10 pounds per gallon of the mixture consisting essentially of sodium or potassium nitrite, 2–25 weight percent, sodium or potassium gluconate 2–25 weight percent, sodium or potassium nitrate, 2–25 weight percent, and sodium hydroxide, balance to 100 weight percent, e.g., by immersing the workpiece in an elevated temperature bath at temperatures between about 200° F. and 300° F.

3,690,950

BATTERY PLATE GRID

Ellis G. Wheadon, Yorktown, and Norman L. Willmann, Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Original application Nov. 29, 1968, Ser. No. 780,068, now Patent No. 3,546,854. Divided and this application May 18, 1970, Ser. No. 38,440
Int. Cl. H01m *35/04*
U.S. Cl. 136—37 **3 Claims**



A composite battery plate grid and process for forming same the grid being formed from a fan-like conductor and a grate-like nonconductor bonded one to the other by a plurality of fusion-interlocked joints.

3,690,951

Patent Not Issued For This Number

3,690,952

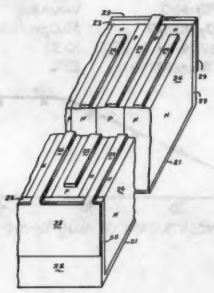
Patent Not Issued For This Number

3,690,953

VERTICAL JUNCTION HARDENED SOLAR CELL

Joseph F. Wise, Dayton, Ohio, assignor to the United States of America as represented by the Secretary of the Air Force

Filed Sept. 10, 1970, Ser. No. 70,965
Int. Cl. H01l *15/02*
U.S. Cl. 136—89 **1 Claim**



A solar cell constructed from a slab of epitaxially grown silicon containing a plurality of very thin alternate N and P zones, cut, lapped, and polished to a thickness of approximately .010 inch, having a common deposited aluminum contact connecting on the back side of the cell to each of the N zones and another common deposited aluminum contact on the back side of the cell connecting to the P zones, and the cell oriented such that the direction of impingement of the solar energy on the front surface of the cell is in a direction generally parallel to the alternate zones of N and P material provides a high efficiency, hardened solar cell.

3,690,954

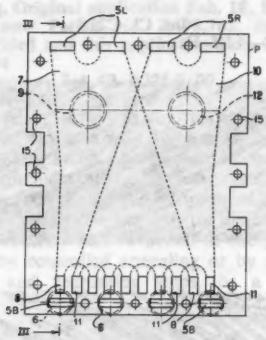
FUEL CELL AND ELECTROLYTE SUPPLY SYSTEM

Bernard Warszawski, Paris, and Henri Vandenberghe, Vincennes, France, assignors to Societe Generale de Constructions Electriques et Mecaniques (Alsthom), Paris, France

Filed Mar. 1, 1971, Ser. No. 119,796
Claims priority, application France, Mar. 2, 1970, 7007454
Int. Cl. H01m *27/02*
U.S. Cl. 136—86 **9 Claims**

The marginal portions of thin, sheet-like electrodes and diaphragms are pierced to form, when the diaphragms and electrodes are assembled in alternately placed stacks, ducts and channels. The end plates holding the stack of electrodes together are formed with openings and ducts interiorly of the thickness thereof to interconnect the ducts and channels through the electrode-diaphragm stack in selected hydraulic circuits. Two distinct groups of ducts are provided, one in communication with the faces of the electrodes, at alternate sides, to permit application of electrolyte charged with oxidizing, or reducing-type reactants,

respectively; the other group of ducts or channels is independent of the first group and non-communicating with



the first set of ducts to provide for intercommunication of the electrolyte itself.

3,690,955

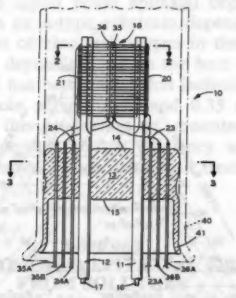
THERMOELECTRIC CONVERTERS AND METHOD OF MAKING SAME

Robert T. Luedeman, Metuchen, and Walter Alvin Troeger, Berkeley Heights, N.J., assignors to Weston Instruments Division, Newark, N.J.

Filed June 16, 1969, Ser. No. 834,936

Int. Cl. H01v *1/02*

U.S. Cl. 136—226 **10 Claims**



A thermoelectric converter employs two rods fixedly joined in juxtaposed relationship by a mounting located between different ends of the rods so that portions of both rods extend from the surface of the mounting. A coil formed with at least one, and typically a multiplicity of hot and cold thermocouple junctions is wound about rod end portions extending from the surface of the mounting, the cold junctions being in thermal contact with one of these end portions. The rods are electrically insulated from the coil and have both good thermal conductivity and rigidity. The other end portions extending from the mounting may be thermally coupled to a heat sink so that the temperatures of the cold junctions are maintained constant and low relative to their corresponding hot junctions. In addition to serving as rigid coil supports and heat sinks for the cold junctions, the rods may be laterally displaced prior to being fixedly joined by the mounting to alter the spacing between hot and cold junctions and correspondingly the converter transfer gain. Electrical access to the coil, and particularly to the coil ends, may be made by way of elongated terminal pins fixed on the mounting in a manner similar to that of the rods. Thermal isolation between pins is achievable by appropriately positioning the pins relative to the rods. Enclosure of the coil may be effected by joining a suitable housing to the mounting with a hermetic enclosure evacuated to obtain maximum level of electrical output being specifically contemplated.

Also disclosed is a method of making the aforedescribed converter which includes removing discrete portions of coatings from a conductor wound on the suitably spaced rods and initially fully coated with a material of dissimilar thermoelectric properties to obtain the desired lengths of hot and cold thermocouple junctions.

3,690,956

VALVE

Earl A. Thompson, Bloomfield Hills, Mich., assignor to F. Jos. Lamb Company, Warren, Mich.

Original application Feb. 24, 1966, Ser. No. 529,830, now Patent No. 3,508,529, dated Apr. 28, 1970. Divided and this application Mar. 18, 1970, Ser. No. 20,515

Int. Cl. C22c *37/06*; F01l *3/02*

U.S. Cl. 148—2 **6 Claims**

Valves for internal combustion engines are cast of high carbon, high chromium alloy containing from about 1.3% to about 3.1% carbon, from about 15% to about 35% chromium with the remainder iron, with or without up to about 3.25% silicon, manganese and other residuals. After the metal is cast, it is cooled so quickly that a relatively small number of relatively large primary chromium carbide particles are formed and widely dispersed in a matrix of austenite containing a solid solution of chromium and carbon. Then large numbers of relatively small particles of chromium carbides are precipitated from the matrix and distributed throughout the spaces between the large primary carbon particles leaving the remainder of the matrix containing carbon and susceptible to subsequent hardening. Then the casting is hardened by heating and subsequent quenching at such temperature and for such time that the matrix is substantially converted to martensite without significantly changing the carbide particles.

3,690,957

CAMSHAFT

Earl A. Thompson, Bloomfield Hills, Mich., assignor to F. Jos. Lamb Company, Warren, Mich.

Original application Feb. 24, 1966, Ser. No. 529,831, now Patent No. 3,501,976, dated Mar. 24, 1970. Divided and this application Mar. 18, 1970, Ser. No. 20,514

Int. Cl. C21d *9/30*; C22c *37/06*

U.S. Cl. 148—3 **5 Claims**

A camshaft for internal combustion engines made from an alloy containing from 1.3% to about 3.1% C, from about 15% to about 35% Cr with the remainder iron, with or without up to about 3.25% Si, Mn and other residuals. The alloy is cast, cooled so a relatively small number of relatively large primary chromium carbide particles are formed and widely dispersed in a matrix of austenite

containing a solid solution of chromium and carbon. Then large numbers of relatively small particles of chromium carbides are precipitated from the matrix and distributed throughout the spaces between the large primary carbide particles leaving the remainder of the matrix containing carbon and susceptible to subsequent hardening. Then hardening the casting by heating and subsequently quenching to convert the matrix to substantially a martensitic structure without significantly changing the carbide particles.

3,690,958

ROCKER ARM

Earl A. Thompson, Bloomfield Hills, Mich., assignor to F. Jos. Lamb Company, Warren, Mich.

Original application Feb. 24, 1966, Ser. No. 529,829, now Patent No. 3,502,058, dated Mar. 24, 1970. Divided and this application Mar. 18, 1970, Ser. No. 20,516

Int. Cl. C22c *37/06*; F01l *1/18*

U.S. Cl. 148—3 **5 Claims**

A rocker arm for internal combustion engines made from an alloy containing from 1.3% to about 3.1% C, from about 15% to about 35% Cr with the remainder iron, with or without up to about 3.25% Si, Mn and other residuals. The alloy is cast, cooled so a relatively small number of relatively large primary chromium carbide particles are formed and widely dispersed in a matrix of austenite containing a solid solution of chromium and carbon. Then large numbers of relatively small particles of chromium carbides are precipitated from the matrix and distributed throughout the spaces between the large primary carbon particles leaving the remainder of the matrix containing carbon and susceptible to subsequent hardening. Then hardening the casting by heating and subsequently quenching to convert the matrix to substantially a martensitic structure without significantly changing the carbide particles.

3,690,959

ALLOY, ARTICLE OF MANUFACTURE, AND PROCESS

Earl A. Thompson, Bloomfield Hills, Mich., assignor to F. Jos. Lamb Company, Warren, Mich.

Original application Feb. 24, 1966, Ser. No. 529,690, now Patent No. 3,502,057, dated Mar. 24, 1970. Divided and this application Mar. 18, 1970, Ser. No. 20,517

Int. Cl. C22c *37/06*; F01l *1/14*

U.S. Cl. 148—2 **10 Claims**

Articles of manufacture generally and in particular tappets for internal combustion engines are made of a high carbon high chromium alloy containing from about 1.3% to about 3.1% carbon, from about 15% to about 35% chromium with the remainder iron, with or without up to about 3.25% silicon, manganese and other residuals. The alloy is cast, cooled so quickly that a relatively small number of relatively large primary chromium carbide particles are formed and widely dispersed in a matrix of austenite containing a solid solution of chromium and carbon. Then large numbers of relatively small particles of chromium carbides are precipitated from the matrix and distributed throughout the spaces between the large primary carbon particles leaving the remainder of the matrix containing carbon and susceptible to subsequent hardening. Then the casting is hardened by heating and subsequent quenching at such temperature and at such time that the matrix is substantially converted to martensite without significantly changing the carbide particles.

3,690,960

Patent Not Issued For This Number

3,690,961

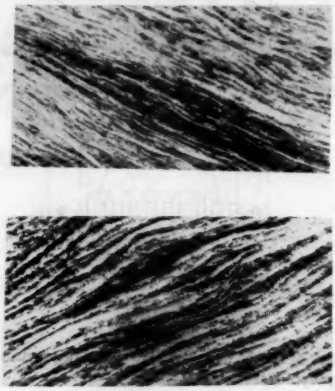
METHOD FOR PRODUCING COMPOSITE ARTICLE

Aurel I. Berghezan, Rhode-St.-Genese, Belgium, assignor to Cabot Corporation

Original application Dec. 6, 1967, Ser. No. 688,945. Divided and this application Jan. 23, 1970, Ser. No. 8,759

Int. Cl. C21d

U.S. Cl. 148—11.5 F **1 Claim**



A nickel-aluminum composite metallic material produced from nickel and aluminum powders characterized by high strength throughout a wide range of temperatures and having excellent resistance to oxidation at elevated temperatures.

3,690,962

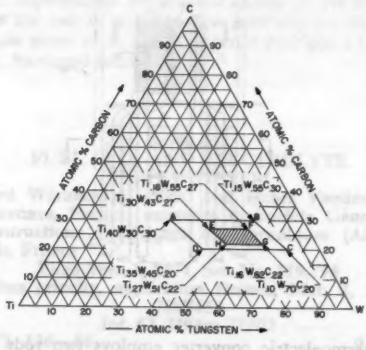
CARBIDE ALLOYS SUITABLE FOR CUTTING TOOLS AND WEAR PARTS

Erwin Rudy, Beaverton, Oreg., assignor to Aerojet-General Corporation, El Monte, Calif.

Filed Feb. 26, 1969, Ser. No. 802,625

Int. Cl. C22c *27/00, 29/00*

U.S. Cl. 148—32 **6 Claims**

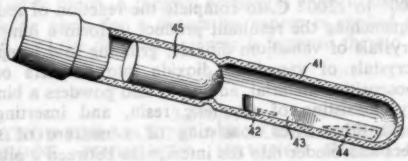


This invention relates to refractory metal bonded carbide alloys for use as cutting tools and in other applications where high hardness and abrasion resistance are required. The desired fine-grain, lamellar microstructure is obtained preferably by casting eutectic, or near-eutectic alloys of a Group IV*a* metal (titanium, zirconium, hafnium), tungsten and carbon which may contain certain alloying and inert materials. For selected applications, the composites may be fabricated by powder-metallurgical techniques.

3,690,963
COMPACTIBLE FUSED AND ATOMIZED METAL POWDER
Donald R. Spink, Waterloo, Ontario, Canada, and Allen C. Goodrich, East Aurora, N.Y., assignors to Amax Specialty Metals, Inc., Akron, N.Y.
No Drawing. Original application Feb. 18, 1966, Ser. No. 528,390, now Patent No. 3,498,782, dated Mar. 3, 1970. Divided and this application Feb. 24, 1970, Ser. No. 13,794
Int. Cl. B22f 9/00
U.S. Cl. 148—126 3 Claims

Metal powders produced by fusing and atomizing metals selected from Groups 4, 5 and 6, the rare earths, and the actinium series of the periodic table and their alloys are made highly compactible by reducing their relatively high energy state in the as-produced condition to a lower energy state accompanied by the discharge of energy in the form of heat. This reduction in energy state is accomplished by controlled annealing or by a plurality of compacting and recrushing steps, or a combination thereof.

3,690,964
ELECTROLUMINESCENT DEVICE
Robert H. Saul, Scotch Plains, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.
Filed Aug. 8, 1969, Ser. No. 848,546
Int. Cl. H01l 7/38, 7/34; H05 33/00
U.S. Cl. 148—171 5 Claims

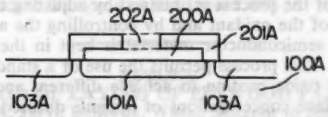


The efficiency of gallium phosphide electroluminescent devices, emitting light in the red region of the spectrum, produced by the liquid phase epitaxial deposition of p-type material on an n-type substrate depends in part on the concentration of zinc and oxygen in the gallium solvent used in the deposition and on the heat treatment after deposition. It has been found that inclusion in the gallium of 0.03 mole percent zinc and 0.35 mole percent Ga_2O_3 lead to the production of mounted devices of greater than 6 percent photon efficiency when junction formation is followed by a suitable heat treating schedule.

3,690,965
SEMICONDUCTOR EPITAXIAL GROWTH FROM SOLUTION
Arpad Albert Bergh, Murray Hill, Carl Ralph Paola, Westfield, and Robert H. Saul, Scotch Plains, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.
Filed Nov. 29, 1971, Ser. No. 202,837
Int. Cl. H01l 7/38
U.S. Cl. 148—172 14 Claims

Crystalline layers of Group III–V semiconductor materials are grown epitaxially from solution by a method which includes the isolation of small equal portions of solution from a solution reservoir. The portions in contact with the crystal substrate are constrained in a direction perpendicular to the substrate to be less than 3 millimeters thick before crystal growth is initiated by lowering the temperature of the substrate and its contacting solution. At the termination of growth, the depleted solution is removed from the grown layer leaving a surface sufficiently perfect to allow further processing without an intervening grinding or polishing operation.

3,690,966
METHOD OF MANUFACTURING MICROSTRUCTURES
Yutaka Hayashi and Yasuo Tarui, Tokyo, Japan, assignors to Kogyo Gijutsuin, Tokyo-to, Japan
Filed Mar. 31, 1970, Ser. No. 24,168
Claims priority, application Japan, Oct. 15, 1969, 44/81,843
Int. Cl. H01l 7/44
U.S. Cl. 148—187 8 Claims



A method of manufacturing a microstructure which comprises forming a substance layer on the surface of a workpiece, working said substance layer into a desired configuration during or after said formation thereof, changing the composition of a portion of the said surface layer 7, said surface layer having a hole in the portion of said surface layer whose composition has been changed, removing the remainder of said substance layer previously formed through said hole, and utilizing as a processing means the portion of said surface layer of changed composition, adjacent to said workpiece.

3,690,967
METHOD FOR THE PRODUCTION OF A GERMANIUM PLANAR TRANSISTOR
Helmut Schadlich and Wolfgang Schembs, Munich, Germany, assignors to Siemens Aktiengesellschaft, Munich, Berlin and Erlangen, Germany
Filed July 7, 1970, Ser. No. 52,912
Claims priority, application Germany, July 9, 1969, P 19 34 820.0
Int. Cl. H01l 7/44
U.S. Cl. 148—187 1 Claim

A method for the production of a germanium planar transistor, wherein the base zone and the emitter zone are being produced through indiffusion of doping materials into a germanium monocrystal of a certain conductivity type. Donors are diffused into the adjoining germanium surface from a donor containing SiO_2 layer. The germanium surface is masked with an interim layer consisting of pure SiO_2 outside the area which is to be diffused with donors. The donor containing SiO_2 layer is used as a mask in the acceptor diffusion.

3,690,968
METHOD FOR FORMING A FIELD EFFECT DEVICE
Charles H. Fa, Santa Clara, and Clarence K. Suzuki, San Jose, Calif., assignors to Advanced Memory Systems, Inc., Sunnyvale, Calif.
Filed Mar. 5, 1971, Ser. No. 121,259
Int. Cl. H01l 7/36
U.S. Cl. 148—188 37 Claims

A method for fabricating semiconductor devices by means of certain in-situ and encapsulating operations thus minimizing or desensitizing the environmental contaminants. The invented process when used to produce insulated gate field effect transistors produces improved process yields and devices with improved electrical characteristics.

3,690,969

METHOD OF DOPING SEMICONDUCTOR SUBSTRATES

Robert Guy Hays, Scottsdale, Ronald Charles Pennell, Mesa, and Edwin Emmett Reed and Charles Edward Volk, Scottsdale, Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed May 3, 1971, Ser. No. 139,505
Int. Cl. H01l 7/34
U.S. Cl. 148—188 10 Claims

There is disclosed a method of controlling surface dopant concentration in a semiconductor material in which the dopant is diffused from a doped oxide source. The method involves the use of an oxidizing ambient during the doping operation which creates a growing interface oxide barrier to moderate the doping of the substrate. Control of the process is obtained by adjusting the partial pressure of the oxidant and by controlling the amount of time the semiconductor material is kept in the diffusion chamber. This process permits the use of a standard highly doped oxide coating to achieve different and controllable surface concentrations of dopants diffused from the doped oxide into the semiconductor material by controlling the rate of growth of the interface oxide barrier which results from the use of the oxidizing ambient.

3,690,970

PROPELLANT POWDERS CONTAINING NITROCELLULOSE, STABILIZED WITH CERTAIN ALDEHYDES

Gunther Schreiner and Ernst-Joachim Stoetzer, Kleine Geest, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

No Drawing. Filed Aug. 15, 1969, Ser. No. 850,647
Claims priority, application Germany, Aug. 16, 1968, P 17 96 009.7
Int. Cl. C06b 19/06, 5/00, 5/04
U.S. Cl. 149—2 7 Claims

A single or multiple-base propellant powder having improved ballistic, mechanical and chemical properties which comprises a nitrocellulose or nitroglycerin base powder and an effective amount of an aliphatic or aromatic aldehyde.

3,690,971

PYROTECHNIC COMPOSITION FOR COLORED SMOKE PRODUCTION

Frank C. Gunderloy, Santa Susana, Charles L. Hamermesh, Tarzana, and Ross I. Wagner, Woodland Hills, Calif., assignors to North American Rockwell Corporation

No Drawing. Filed Aug. 11, 1970, Ser. No. 63,033
Int. Cl. C06d 3/00
U.S. Cl. 149—19 20 Claims

A pyrotechnic composition for colored smoke production including a dye precursor which is capable of reacting in situ to yield a sublimable dye which will recondense as a colored smoke and a heat producing composition which is capable of generating sufficient heat to react the dye precursor to yield the sublimable dye and to sublime the dye without substantial destruction thereof.

3,690,972

GREEN FLARE COMPOSITION

Seymour M. Kaye, Morris Plains, and Bossie Jackson, Jr., Newark, N.J., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Filed July 16, 1971, Ser. No. 163,493
Int. Cl. C06d 1/10
U.S. Cl. 149—19 10 Claims

The combination of a finely divided non-halogenated organic fuel such as an acetal resin and a chlorinated barium compound as an oxidizing material to produce a pyrotechnic composition emitting radiation in the green spectral region with minimal overtones of extraneous colors, thus enabling a positive color identification.

3,690,973

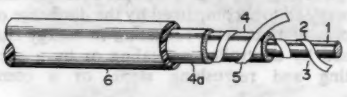
Patent Not Issued For This Number

3,690,974

METHOD FOR MANUFACTURING A TEMPERATURE DETECTING WIRE

Toshinobu Kawazoe, 863–1 Shiro, Tokorozawa-shi, Saitama-ken, Japan

Filed Dec. 2, 1969, Ser. No. 881,425
Claims priority, application Japan, Dec. 17, 1968, 43/92,026; Jan. 21, 1969, 44/3,815
Int. Cl. H01b 13/06
U.S. Cl. 156—51 5 Claims



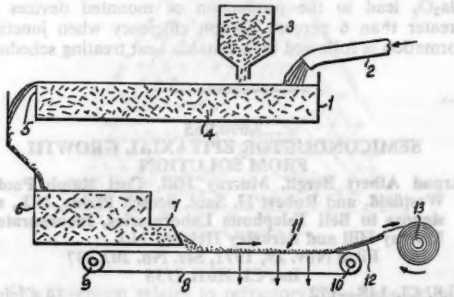
A method for manufacturing a temperature detecting wire which comprises the steps of heating a mixture of vanadium pentoxide and diammonium hydrogenphosphate to a temperature of 500° to 550° C. in an atmosphere of nitrogen gas, reducing most of the vanadium pentoxide to vanadium dioxide by hydrogen evolved through thermal decomposition of the diammonium hydrogenphosphate, allowing a reaction mixture to cool in an atmosphere of nitrogen gas, and then heating it again to a temperature of 1100° to 1200° C. to complete the reaction of reduction, quenching the resultant product to form a lump of fine crystals of vanadium dioxide, grinding said lump of fine crystals of vanadium dioxide into powders of a thermosensitive material, adding to said powders a binder mainly consisting of synthetic resin, and inserting a thermosensitive layer consisting of a mixture of said powders and binder into the interspaces between a plurality of conductive wires.

3,690,975

MANIPULATION OF FILAMENTS

Denis William Groombridge, Spondon, England, assignor to Courtaulds Limited, London, England

Filed Nov. 18, 1969, Ser. No. 877,783
Int. Cl. B29j 5/00
U.S. Cl. 156—62.2 7 Claims



A process for the production of an assembly of oriented staple fibres which comprises feeding a dispersion of staple fibres in a liquid medium at a rate such that laminar flow conditions are experienced, onto a perforate surface through which the liquid medium may pass but on which the staple fibres are retained, so that the staple fibres lie on the perforate surface substantially at right angles to the direction of flow of the dispersion. The assembly of

fibres may be removed from the perforate surface in the form of a coherent layer of fibres, and may be used, for example, for the production of resin composites.

3,690,976
METHOD OF MAKING DECORATIVE WOOD PANELS

Tutomu Nakajima, Osaka, and Tadasi Shyaku, Hyogo, Japan, assignors to Asahi Fancy Plywood Co., Ltd., Osaka, Japan

Filed Oct. 23, 1969, Ser. No. 868,767
Int. Cl. B32b *31/12*
U.S. Cl. 156—90 **1 Claim**

A method for producing an overlaid decorative wood panel which does not show cracks in its veneer. A gluing agent prepared by mixing a thermosetting resin gluing agent and a thermoplastic resin gluing agent in the ratio of about 1:0.5 to about 1:2 is applied to a substrate wood member. Thereafter, a non-sized paper is applied into which the gluing agent for paper is allowed to permeate and set to touch. A thermal pressing is given to the paper, a gluing agent for a decorative veneer is applied thereupon, and the decorative veneer is fastened thereto.

3,690,977
METHOD FOR MAKING AIR-PERMEABLE WATER-PROOF PRODUCTS HAVING FABRIC-LIKE AESTHETIC PROPERTIES

John T. Loft, Springfield, Steven G. Plovan, Livingston, and Clifford M. Vogt, Madison, N.J., assignors to Celanese Corporation, New York, N.Y.

No Drawing. Filed June 4, 1970; Ser. No. 43,563
Int. Cl. D04h *3/16;* **B32b** *5/24*
U.S. Cl. 156—167 **6 Claims**

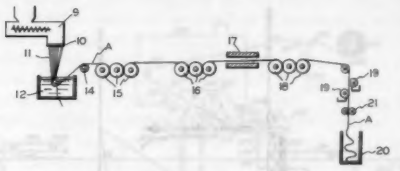
Novel products are described which possess a capability of transmitting air and moisture vapor, are waterproof, and have fabric-like aesthetic properties. These products may have applications such as rainwear material, tent material, garment liners, and shoe liners. These products may be made by spray spinning filamentary polymer material onto open-celled polymer film, or into non-cellular elastic polymer film with the additional steps of stretching and heat setting creating a stable open-celled structure in the film portion of the product. Subsequent calendering of the product may further improve its fabric-like aesthetic properties.

3,690,978
METHOD OF PRODUCING TAPE-SHAPED ASSEMBLY OF ELASTIC FILAMENTS

Hirofumi Nishizawa, Ashiya, Shigeo Kitaura, Osaka, and Misao Sumoto, Hideki Komagata, and Hirosi Matsumoto, Ootsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Aug. 25, 1969, Ser. No. 852,581
Claims priority, application Japan, Aug. 24, 1968, 43/60,791; Oct. 18, 1968, 43/76,309; Dec. 4, 1968, 43/89,223
Int. Cl. D02g *3/22;* **D04h** *3/16*
U.S. Cl. 156—167 **4 Claims**

Method of producing tape-shaped assembly by melt spinning an elastic polymer into filaments, cooling the filaments, arranging the filaments while still tacky to effect side-by-side contact with adjacent filaments and to form a unitary assembly, and drawing the assembly to adjust

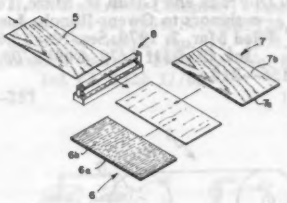


the separating elongation (defined in specification) between adjacent filaments to less than 150%.

3,690,979
METHOD OF LAYING UP PLYWOOD PANELS

Reino A. Jarvi, Bellevue, Wash., assignor to Simpson Timber Company, Seattle, Wash.

Filed Nov. 18, 1969, Ser. No. 877,603
Int. Cl. B32b *31/06, 31/14*
U.S. Cl. 156—182 **7 Claims**



Plywood panels of five or more plies are layed up by coating the outer plies, i.e. the face and back plies, on one side with a long flow phenolic adhesive, laying one piece cross band veneers over each of the adhesive coated veneers to form a series of two ply sandwiches, coating a sheet of center veneer on both sides with a fast curing adhesive relative to the curing time of the long flow adhesive, laying the adhesive coated center veneer over the uncoated cross band sheet of veneer of one of the two-ply structures and laying a second two-ply structure over the adhesive coated center, the cross band of the second two-ply sandwich contacting the adhesive coated center ply.

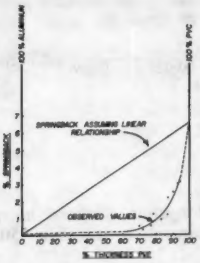
3,690,980
THERMOSETTING LAMINATES

Dusan C. Prevorsek, Morristown, Hsin L. Li, Parsippany, Paul J. Koch, Mount Freedom, Hendrikus J. Oswald, Morristown, and George J. Schmitt, Madison, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Application Apr. 4, 1968, Ser. No. 718,858, now Patent No. 3,578,552, which is a continuation-in-part of application Ser. No. 604,255, Dec. 23, 1966, now Patent No. 3,520,720. Divided and this application June 29, 1970, Ser. No. 60,180
The portion of the term of the patent subsequent to July 14, 1987, has been disclaimed
Int. Cl. B31f *43/00*
U.S. Cl. 156—199 **2 Claims**

A cold formable sandwich structure which has a thermosetting resinous core between face sheets comprising laminae of a thermoplastic sheet which incorporates a metallic foil. The metal foil-thermoplastic resin facing sheets are of sufficient thickness and strength so that the sandwich containing the thermosetting core between the

face sheets may be cold-formed into shaped articles and such shape as is imparted to it is retained by the thermoplastic face sheets without external constraint on the shape as the thermosetting core is subsequently cured at relatively high temperature.



3,690,981

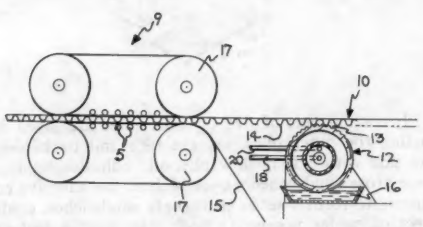
PROCESS FOR THE MANUFACTURE OF LAMINATED ARTICLE

Frank J. Di Frank and Glenn W. Maze, Toledo, Ohio, assignors to Owens-Illinois, Inc.

Filed Mar. 2, 1970, Ser. No. 15,688

Int. Cl. B31f *1/20;* **C09j** *3/02*

U.S. Cl. 156—210 **3 Claims**



A novel process for the fabrication of a laminated article of manufacture wherein raw starch adhesive solution is first converted to a partially gelatinized starch, secondly, the just prepared partially gelatinized starch is applied to a receptive substrate before it and at least one lamina is brought together in bonding position, and then the partially gelatinized starch is essentially substantially gelatinized to produce the desired laminated article of manufacture.

3,690,982

FILAMENTARY OR SHEET-LIKE MATERIAL OF POLYMERIC SUBSTANCES AND METHOD AND APPARATUS FOR PRODUCING SAID MATERIAL

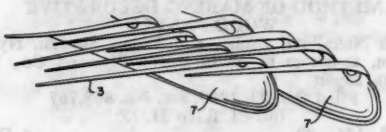
Ole-Bendt Rasmussen, 28 Rugmarken, Farum, Denmark

Original application June 7, 1966, Ser. No. 555,835, now Patent No. 3,505,162. Divided and this application June 27, 1969, Ser. No. 854,004

Int. Cl. D04b *39/00*

U.S. Cl. 156—148 **8 Claims**

Process of making filamentary or sheet-like materials by extruding an extrudable synthetic polymeric material with at least one other extrudable material in the form of a multiplicity of thin interspersed lamellae extending in closely spaced relation generally in the extrusion direction, combining the lamellae thus formed into a composite unitary stream, drawing out from at least one surface of the lamellae tentacles extending generally in the extrusion direction and solidifying the resultant stream into filamentary or sheet-like form. The lamellae can be subdivided into short segments along their length and these



segments combined into plural separate distinct streams with the tentacles being drawn out from a surface of some or all of these segment streams instead of from a composite stream of the lamellae directly.

3,690,983

PROTECTION OF INFORMATION IN RECORDING MATERIAL

Daniel Alois Claeys, Mortsel, Belgium, assignor to Gevaert-Agfa N.V., Mortsel, Belgium

No Drawing. Filed Sept. 3, 1969, Ser. No. 855,022

Claims priority, application Great Britain, Sept. 3, 1968, 41,794/68

Int. Cl. B32b *31/12, 31/26*

U.S. Cl. 156—230 **5 Claims**

A relief image is formed by exposing to a heat pattern a heat-sensitive recording material comprising a generally uniform layer consisting essentially of a continuous phase of hydrophilic binding agent having distributed therethrough in substantially discrete, generally contiguous relationship a dispersed phase of particles consisting essentially of a hydrophobic thermoplastic polymer, in a weight ratio relative to the binder phase in excess of 1:1, the heat of such pattern being sufficient to at least partially coalesce the polymer particles in the heated area and thereby significantly reduce the fluid permeability of the layer in the heated regions thereof, and thereafter developing the exposed heat-sensitive recording material by washing off the unheated regions thereof of substantially unreduced permeability while leaving the remaining portions of the coalesced particles to form the relief image, is given a protective covering by applying to the relief image with pressure a hydrophilic colloid layer carried on a temporary hydrophobic sheet support, and stripping off the temporary sheet support so as to leave the colloid layer superimposed upon the relief image. Preferably, the colloid protective layer has a thickness of 3–10μ and preferably the hydrophilic colloid layer is wet with an aqueous liquid which can contain a softening agent for the hydrophilic colloid when the colloid layer is applied to the relief layer.

3,690,984

RELEASABLE MOUNTING METHOD OF PLACING AN ORIENTED ARRAY OF SEMICONDUCTOR DEVICES ON THE MOUNTING

William R. Wanesky, Wescosville, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.

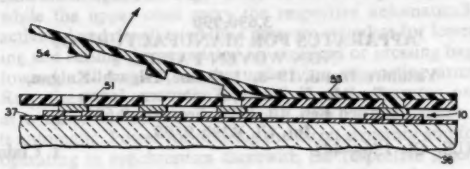
Application Apr. 10, 1968, Ser. No. 729,859, now Patent No. 3,632,074, which is a continuation-in-part of application Ser. No. 673,900, Oct. 9, 1967. Divided and this application July 30, 1970, Ser. No. 64,898

Int. Cl. B44c *1/28, 3/12;* **H01c** *7/00*

U.S. Cl. 156—235 **6 Claims**

An oriented array of small, fragile electrical devices such as beam lead transistors or integrated circuits,

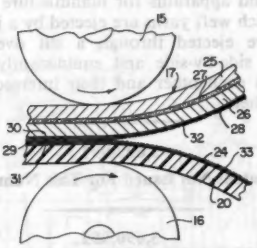
partially embedded in wax, are removed from the wax and transferred to a releasable mounting without disrupting the orientation of the devices. The releasable mounting comprises a plate with a layer of silicone rubber or resin which exerts a suction or vacuum holding force on the array of oriented devices.



3,690,985
METHOD FOR FORMING A MATTE FINISH ON A SURFACE

Herbert K. Price, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed Dec. 7, 1970, Ser. No. 95,835
Int. Cl. B32b *31/18*
U.S. Cl. 156—254 12 Claims



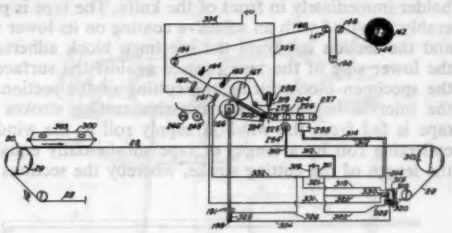
A matte finish is provided on a desired surface by the heating and compressing of a fluorocarbon coating to the desired surface so that the coating is secured thereto. Thereafter, the coating is split between opposed sides thereof so that one split part of the coating remains on the surface to provide the matte finish thereon and the other split part of the coating is removed from the surface.

3,690,986
CARTON LABELING METHOD

David L. Pearl, Atlanta, George E. Harris, Marietta, and John G. Waller, College Park, Ga., and Beverly P. Head, Jr., Birmingham, Ala., assignors to W. R. Grace & Co., Duncan, S.C.

Application June 17, 1968, Ser. No. 737,601, which is a continuation-in-part of application Ser. No. 626,288, Mar. 27, 1967. Divided and this application Aug. 4, 1969, Ser. No. 855,063
Int. Cl. B32b *31/04*
U.S. Cl. 156—257 5 Claims

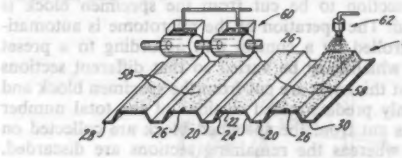
Carton closing and labeling method and apparatus wherein an open carton of the type utilized for storing eggs is conveyed along a conveyor belt with the eggs positioned in the egg receiving cells of the lower portion of the carton, the lid of the carton is pivoted over the bottom section of the carton and latched to the bottom section of the carton, the carton is stamped with a date; the top surface of the carton is heated prior to the application of the label, and a label is applied to the top surface of the closed carton. The label contains a thin layer of heat responsive adhesive, and after the label is applied to the top surface of the carton, the label is heated and pressed onto the top surface of the carton.



3,690,987
METHOD OF MAKING AN INSULATED BUILDING PANEL UNIT

Bernard E. Curran, Sewickley, Rodney W. Gartner, Coraopolis, and Robert G. Lindner, Sewickley, Pa., assignors to H. H. Robertson Company, Pittsburgh, Pa.

Original application Apr. 12, 1968, Ser. No. 720,909, now Patent No. 3,555,756, dated Jan. 19, 1971. Divided and this application Oct. 29, 1969, Ser. No. 872,029
Int. Cl. B32b *31/00*
U.S. Cl. 156—257 10 Claims



An insulated building panel unit consisting of a metal liner sheet, a layer of rigid foamed plastic material self-adhered to the liner sheet and a facing sheet adhesively secured to the layer of foamed plastic material. Selected regions of the surface of the foamed plastic material are modified to provide essentially flat surfaces for adhesive bonding with essentially flat surfaces of the facing sheet. A method is described for making the present insulated building panel unit.

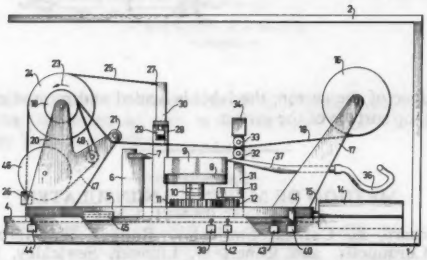
3,690,988
MICROTOME WITH MEANS FOR COLLECTING SECTIONS OF THE SPECIMEN ON A TAPE

Sven Gustav Folke Ullberg, Danderyd, Sweden, assignor to Incentive Research & Development AB, Bromma, Sweden

Filed Dec. 16, 1969, Ser. No. 885,535
Int. Cl. B26d *4/46*
U.S. Cl. 156—353 9 Claims

A microtome for section-cutting in particular of biological specimens and especially fresh-frozen specimens embedded in an ice block, comprising a knife and a specimen holder reciprocatingly movable relative each other in a cutting stroke and opposite return stroke so that during the cutting stroke the knife passes above the specimen holder and can cut a section from the upper surface of a specimen block supported by the specimen holder. A tape extends from a wind-off supply roll to a wind-on collecting roll above the knife and the specimen holder

preferably in a direction parallel to the direction of the mutual movement between the knife and the specimen holder. During the cutting stroke the tape is pressed against the upper surface of the specimen block on the specimen holder immediately in front of the knife. The tape is preferably provided with an adhesive coating on its lower side and the section cut from the specimen block adheres to the lower side of the tape pressed against the surface of the specimen block during the cutting of the section. In the interval between two successive cutting strokes the tape is fed from the wind-off supply roll to the wind-on collecting roll by a length of tape substantially equal to the length of the cutting stroke, whereby the sections cut



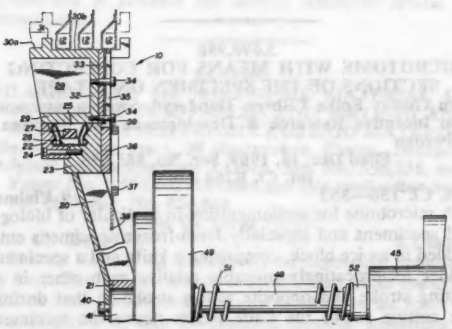
from the specimen block are obtained mounted in an orderly sequence upon the tape wound onto the collecting roll. Between successive cutting strokes the specimen holder is raised towards the knife by a predetermined number of incremental steps, whereby the thickness of the next section to be cut from the specimen block is determined. The operation of the microtome is automatically controlled by a control unit according to a preset program, which may be varied so that different sections of different thickness are cut from the specimen block and so that only predetermined sections of the total number of sections cut from the specimen block are collected on the tape, whereas the remaining sections are discarded.

3,690,989

TIRE BEAD HANDLING APPARATUS

Robert F. McCafferty, Akron, and Gerald D. Riggle, Stow, Ohio, assignors to Akron Standard, division of Eagle-Picher Industries, Inc., Cincinnati, Ohio

Filed May 6, 1970, Ser. No. 35,093
Int. Cl. B29h *17/22*
U.S. Cl. 156—403 **2 Claims**



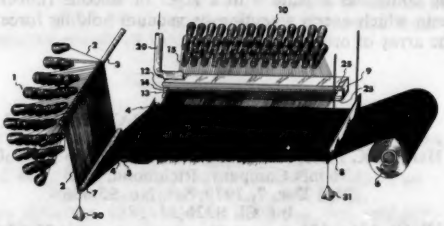
Apparatus for handling large diameter bead wire bundles for placement on a tire building drum. Apparatus is associated with the building drum and provides automatic adjustment for reasonable variations in bead diameter and a positive adjustable bead setting pressure (up to a magnitude of 3000 lbs. per bead).

3,690,990

APPARATUS FOR MANUFACTURE OF NON-WOVEN FABRIC

Yasuhiro Izumi, 19–8, 1-chome, Higashi-Kaigan, Tsujido, Fujisawa, Kanagawa, Japan

Filed Feb. 10, 1970, Ser. No. 9,681
Int. Cl. B29h *9/00*
U.S. Cl. 156—441 **1 Claim**



Method and apparatus for manufacture of non-woven fabric in which weft yarns are ejected by a jet of air under high pressure ejected through a slit over warp yarns extended in side-by-side and equidistantly spaced apart relation with each other and their intersections are connected together.

3,690,991

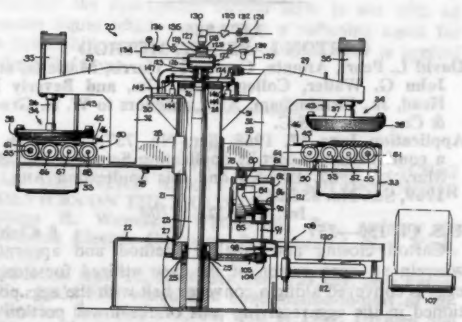
Patent Not Issued For This Number

3,690,992

APPARATUS FOR PRESSING THE SEAMS OR SPLICES OF RAW TIRES

Hubert Breuer, Zweifall, Germany, assignor to Uniroyal Englebert Deutschland AG, Aachen, Germany

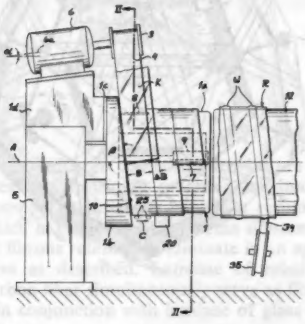
Filed Dec. 7, 1970, Ser. No. 95,492
Claims priority, application Germany, Dec. 20, 1969, P 19 64 018.7
Int. Cl. B29h *7/08*
U.S. Cl. 156—412 **14 Claims**



A continuously running, turret-type apparatus for automatically and simultaneously stitching the rubber tread and

sidewall seams or splices of several raw pneumatic tires in cylindrical or flat band form at a time, is disclosed. The vertical rotatable turret structure carries a star-shaped arrangement of a relatively large plurality of radial, horizontal, vertically aligned pairs of arms, of which the lower ones are designed for supporting raw tires being worked on, while the upper ones carry the respective automatically activated and deactivated fluid pressure cylinders for lowering and raising the associated air cushions or pressing bags toward and away from the underlying supporting arms. Raw tires are manually loaded into the apparatus one at a time, but ejection of pressed tires in like sequence is automatic. Power for rotating the turret structure and for operating in synchronism therewith the respective mechanisms by means of which the pressed tires are loosened and ejected from the various lower arms as the latter reach the unloading/loading station, is taken off a common drive mechanism.

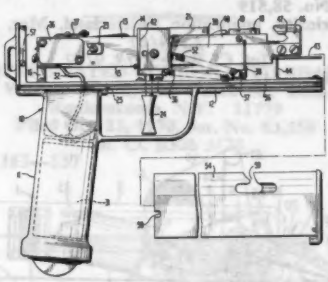
3,690,993
APPARATUS FOR MAKING HELICAL-SEAM TUBING FROM A SYNTHETIC-RESIN STRIP
Manfred Hawerkamp, 47 Altenrather Str., 521 Troisdorf, Germany
Filed June 12, 1970, Ser. No. 45,716
Claims priority, application Germany, June 12, 1969, P 19 29 926.4
Int. Cl. B31c *5/00*
U.S. Cl. 156—429 **8 Claims**



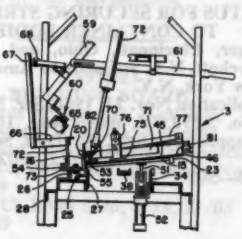
An apparatus for forming helical-seam tubing in which an endless transport band passes over at least one helical turn along the periphery of a cylindrical mandrel to deposit and form a synthetic-resin band into helical configuration thereon. The transport band is deflected inwardly into the interior of the mandrel at an inlet slot and emerges at an outlet slot for return to a drive roller.

3,690,994
HAND-CARRIED YARN SPLICING DEVICE
Willie Vincent Williams, 701 S. Green St., Dalton, Ga. 30720
Continuation-in-part of application Ser. No. 790,077, Jan. 9, 1969, now Patent No. 3,607,559. This application Oct. 7, 1970, Ser. No. 78,812
Int. Cl. B65h *21/00*
U.S. Cl. 156—433 **1 Claim**

A hand-held battery-powered apparatus for splicing thermoplastic yarn embodies a pistol-shaped body having a primary guide rail thereon and a fixed heating element near one end of this rail. A trigger operated carriage moves on the rail and carries coacting jaw means which grip and move the yarn ends into close proximity with the radiant heating element. The heating element is energized automatically by the closing of a switch when the carriage is retracted.



3,690,995
PLASTIC LAMINATING APPARATUS
George W. Loy, Scio, Ohio, assignor to Scio Cabinet Company, Inc., Scio, Ohio
Original application Dec. 15, 1969, Ser. No. 885,014. Divided and this application Feb. 10, 1971, Ser. No. 114,290
Int. Cl. B32b *3/04*
U.S. Cl. 156—478 **5 Claims**



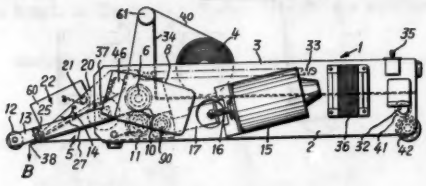
A plastic laminating apparatus for laminating plastic sheet material to a countertop core having a backsplash attached at right angles thereto during a single pass through the apparatus. The apparatus consists of a plurality of longitudinally spaced work stations through which the work is successively moved for progressively shaping and adhering the plastic laminate to the work, such work being guided through the apparatus by receipt of a downwardly projecting portion from the work in a guide track extending the entire length of the apparatus. A back die bends the laminate to conform to the general shape of the backsplash and countertop after heating, and fingers and pressure rolls are used to progressively bend and press the projecting edges of the laminate into firm contact with the edges of the countertop and backsplash. Floating cutters are also used to trim the excess laminate material extending beyond the countertop and backsplash edges, and such excess material may be picked up by a suction blower or removed by a rotary brush prior to passage through final pressure rolls.

3,690,996

APPARATUS FOR THE APPLICATION OF SELF-ADHERING LABELS OR THE LIKE

Kurt Rünzi, Kusnachterstrasse 59, Zumikon, Switzerland

Continuation-in-part of application Ser. No. 708,682, Feb. 27, 1968. This application July 27, 1970, Ser. No. 58,519
Claims priority, application Switzerland, Mar. 1, 1967, 2,984/67
Int. Cl. B65c 9/18, 9/42
U.S. Cl. 156—542 6 Claims



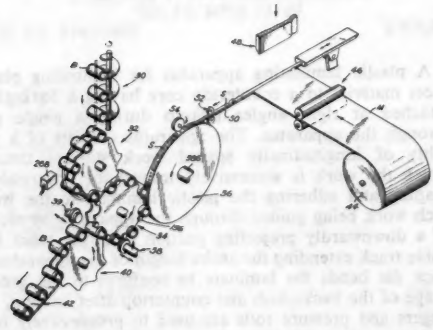
An apparatus for applying self-adhering pressure sensitive labels or the like to articles comprising a carrier band for detachably supporting the labels, and deflecting edge means about which the carrier band is guided in order to free the labels from such carrier band. A pivotably mounted table means cooperates with the carrier band, and the deflecting edge means is disposed at an outer end of such pivotably mounted table means. Additionally, motor-driven transport means are provided for advancing the carrier band, and control means serve to stop the motor-driven transport means as a function of the feed position of a label.

3,690,997

APPARATUS FOR SECURING STRIP MEMBERS TO CONTAINER BODIES

Karl Bofinger, Cincinnati, Ohio, and Walter Thomas Hake, Wyckoff, N.J., assignors to American Can Company, New York, N.Y.

Original application Nov. 21, 1966, Ser. No. 595,809, now Patent No. 3,598,675, dated Aug. 10, 1971. Divided and this application Sept. 22, 1970, Ser. No. 74,402
Int. Cl. B65c 3/12, 9/02
U.S. Cl. 156—567 18 Claims



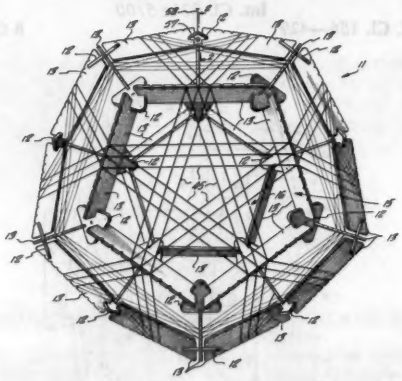
An apparatus for adhesively securing a seamed release strip to the marginal end portion of a tubular container wherein the strip is moved along a circular path of revolution and simultaneously with the movement of the strip, the container, rotating about its own axis, is moved in a circular path of revolution tangential to the strip's path and axially aligned therewith so that a lateral edge of the strip is in substantial alignment with the marginal end portion of the container. An adhesive is applied to either the strip or the container in order that one will adhere to the other upon contact. The leading portion of the strip contacts the marginal end portion of the rotating container and is adhered thereto. The container movement and rotation subsequent to the contacting causes the strip to leave its path of revolution and the remaining portion of the strip to adhere around the marginal end portion of the container. The length of the strip exceeds the circumference of the container causing a trailing portion of the strip to overlap the leading portion upon adherence of the strip to the marginal end portion of the container. The strip is then pressed against the container causing more intimate contact therewith.

3,690,998

DODECAHEDRON ORNAMENT

Olaf G. Brynjegard, 7433 Irondale Ave., Canoga Park, Los Angeles, Calif. 91306

Filed Nov. 30, 1970, Ser. No. 93,613
Int. Cl. A47g 33/08
U.S. Cl. 161—16 8 Claims



An ornament having twelve facets each defined by an open frame having corner connectors each joining three or four side members of adjoining facets. Each facet frame has four or five side members, depending upon the type of dodecahedron. The side members have notches which receive strands which extend from side member to side member of the same or opposed facets exteriorly or interiorly of the ornament to describe geometric patterns. In the case of a regular dodecahedron the corners are all similar pieces and the side members are all similar. A rhombic dodecahedron has two types of corner connectors and two types of side members.

3,690,999

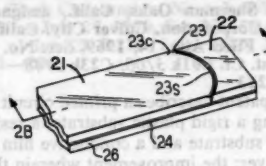
PRECUT COMPOSITE TAPE STRUCTURE

Henry J. Setzer, East Brunswick, N.J., assignor to Dennison Manufacturing Company, Framingham, Mass.

Filed Apr. 28, 1970, Ser. No. 32,608
Int. Cl. B32b 3/10; B41j 1/30
U.S. Cl. 161—39 5 Claims

A precut tape structure for use with an embossing machine. One end of the structure includes a tab that is at least partially severed from the structure. The tab is of a configuration to facilitate manufacture and processing of the tape structure, and removal of a protective liner from

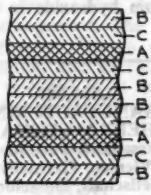
the back of the structure. The tab is also configured to reduce the possibility of machine interference and accidental detachment. The other end of the structure is of a different configuration to distinguish it from the tab end.



3,691,000
GLASS FIBER REINFORCED COMPOSITE ARTICLE EXHIBITING ENHANCED LONGITUDINAL TENSILE AND COMPRESSIVE MODULI

Ilmar L. Kalnin, Millington, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Mar. 10, 1971, Ser. No. 122,842
Int. Cl. B32b *5/12, 27/04*
U.S. Cl. 161—60 13 Claims

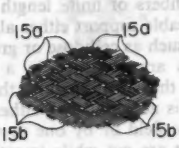


Glass fiber reinforced composite articles are produced which possess a surprisingly enhanced longitudinal stiffness. The composite articles comprise a resinous matrix material which has incorporated therein substantially parallel hybrid fibrous reinforcing laminate in an appropriate concentration as described. Laminae of relatively high modulus carbon fiber simultaneously serve as fibrous reinforcement in conjunction with laminae of glass fiber.

3,691,001
FLEXIBLE PROTECTING SHEATH OF AN ELONGATED FLEXIBLE OPTICAL FIBER BUNDLE

Nagashige Takahashi and Teruo Oouchi, Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 12, 1969, Ser. No. 875,836
Claims priority, application Japan, Nov. 14, 1968, 43/83,465, 43/99,327
Int. Cl. D06m; D06q
U.S. Cl. 161—96 4 Claims

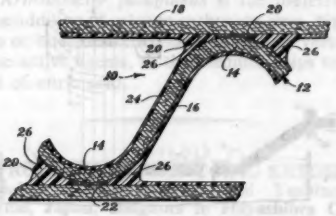


Flexible protecting sheath on an elongated flexible optical fiber bundle such as used in an endoscope and method for forming the same. The protecting sheath comprises an elongated cylindrical braid member snugly fitted on the peripheral surface of the optical fiber bundle and impregnated with a synthetic resin material therewith to form the protecting sheath.

3,691,002
IMPREGNATED CORRUGATED BOARD

William Blandy, 22 Ozark St., Lake Ronkonkoma, N.Y. 11779

Filed Oct. 23, 1970, Ser. No. 83,558
Int. Cl. B32b *3/28*
U.S. Cl. 161—137 7 Claims

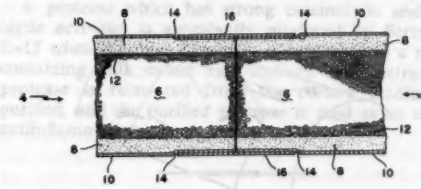


A sheet of paper board comprised of spacedly opposed facing sheets and a corrugated member intermediate the facing sheets is saturated with a resin which coats the corrugated member and also fills the corners at the bonded junctures of the facing sheets and the corrugated member. The method of this invention comprises the steps of forcing resin into the interior flutes of the formed paper board sheet and then rotating the sheet slowly about the longitudinal axis of the corrugations.

3,691,003
BUILDING BOARD

Julius W. Elischer, Nedlands, Western Australia, Australia

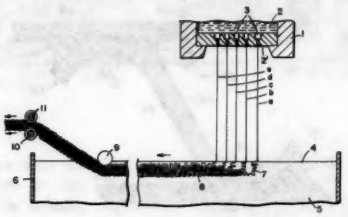
Continuation-in-part of abandoned application Ser. No. 869,392, Oct. 24, 1969. This application Nov. 23, 1970, Ser. No. 91,709
Int. Cl. B32b *3/26, 5/18, 13/08*
U.S. Cl. 161—159 7 Claims



A self-supporting, load bearing building board that is relatively light in weight and economical to manufacture and use. The board has a multi-layered construction with a central core of relatively strong foraminous material, intermediate layers of a different material mechanically bonded to the opposite faces of the core and outer layers of fibrous material bonded to the intermediate layers. The intermediate layers are considerably more dense than the core material and have sufficient compression strength to

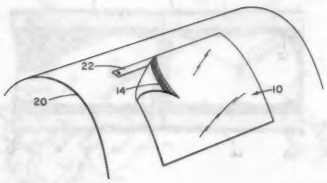
impart dimensional stability thereto. The outer layers are in tension and insure a lasting bond between the intermediate layers and core.

3,691,004
MATTING OF MELT-SPUN AMORPHOUS POLYMER FILAMENTS AND PROCESS
Helmut Werner, Elsenfeld, and Hans Stapp, Momlingen, Germany, assignors to Akzona Incorporated, Asheville, N.C.
Filed Nov. 21, 1969, Ser. No. 878,615
Int. Cl. D04b *3/16, 1/04*
U.S. Cl. 161—150 27 Claims



Production of a matting of melt-spun, substantially amorphous and continuous filaments by depositing the freshly spun filaments onto the surface of a cooling bath to form overlapping self-adhering loops in at least three rows or layers, the loops being oriented at different angles by adjusting the withdrawal of the filaments in a diverging path through the bath, e.g. with the use of a supporting guide plate in contact with an outermost row of filaments. The product is a lightweight, coherent matting of self-bonded, looped filaments and is especially useful in constructing artificial ski slopes and as a reinforcement for transportable turf.

3,691,005
HEADREST WITH ADHESIVE ATTACHMENT
David B. Butler, Wickford, R.I., assignor to The Kendall Company, Boston, Mass.
Filed Nov. 16, 1970, Ser. No. 89,717
Int. Cl. C09j *7/02;* B32b *7/14*
U.S. Cl. 161—167 2 Claims



A protective cover such as a headrest is formed from a sheet of nonwoven fabric bearing along one edge a strip of adhesive, said adhesive being capable of adhering firmly to a smooth surface such as a metal or plastic strip, but showing little or no adhesion to the fabric of the headrest.

3,691,006
Patent Not Issued For This Number

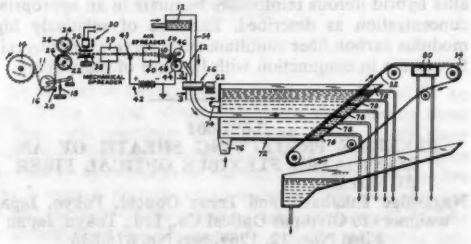
3,691,007
PRINTED CIRCUIT BOARD FABRICATION BY ELECTROPLATING A SURFACE THROUGH A POROUS MEMBRANE
James Pavlou, Sherman Oaks, Calif., assignor to The Mica Corporation, Culver City, Calif.
No Drawing. Filed Aug. 14, 1969, Ser. No. 850,248
Int. Cl. B01k *3/00;* C23b *5/48*
U.S. Cl. 161—213 12 Claims

The present patent describes a printed circuit board material comprising a rigid plastic substrate, a resistive layer carried on said substrate and a conductive film carried on said resistive layer; the improvement wherein the resistive layer is applied to a preformed conductive layer through a porous, polymeric membrane.

3,691,008
TWO-STAGE SODA-OXYGEN PULPING
Hans Edmund Worster, Richmond, British Columbia, and Marian Franciszek Pudek, Coquitlam, British Columbia, Canada, assignors to MacMillan Bloedel Limited, Vancouver, British Columbia, Canada
No Drawing. Filed Apr. 13, 1970, Ser. No. 28,005
Int. Cl. D21b *1/16*
U.S. Cl. 162—25 9 Claims

Subjecting softwood chips to a mild digestion with sodium hydroxide alone, defiberizing the thus treated material and then subjecting the defiberized material to a second digestion with sodium hydroxide in the presence of an excess of oxygen.

3,691,009
METHOD FOR MANUFACTURING NONWOVEN SHEET MATERIAL
Fritz Opderbeck, Dusseldorf, Theodor Ploetz, Hoesel, and Rudolf Thamm, Viersen, Germany, assignors to Feldmuehle Aktiengesellschaft, Dusseldorf-Oberkassel, Germany
Filed Jan. 12, 1970, Ser. No. 2,307
Claims priority, application Germany, Jan. 11, 1969, P 19 01 285.2
Int. Cl. D21f *11/00;* D21h *5/12*
U.S. Cl. 162—146 11 Claims



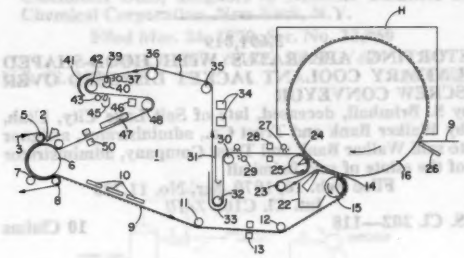
A method and apparatus for making nonwoven sheet material in which endless fibers are spread apart from each other into a fiber mat, then immersed in a forming medium, cut into fibers of finite length and formed into a sheet on a permeable support either alone or with traditional short fibers such as cellulose or ground wood fibers. The endless fibers are provided in a bundle which is beaten to loosen the fibers before the spreading step and the spreading is accomplished either by exposing the fibers to an electric field or by one or more air currents or both. The fibers are cut while immersed in the forming medium (for example, water) by a plurality of replaceable knives mounted on a roller and a counterknife. The knives are spaced about the circumference of the roller at variable distances so that when the roller is rotated the fibers are cut into different lengths.

3,691,010

METHOD AND APPARATUS FOR DEWATERING PAPER WEBS

Kenneth V. Krake, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed July 27, 1970, Ser. No. 58,487
Int. Cl. D21f 11/00; D21j
U.S. Cl. 162—206 10 Claims



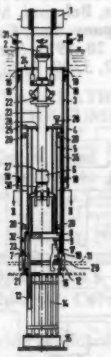
Paper webs, particularly tissue papers, formed by the wet process from an aqueous fiber slurry, are dewatered by a novel press arrangement. The method is accomplished by expelling water from a carrying felt-newly formed web combination and so eliminating the water that the felt is not rewetted by it and crushing of the sheet is avoided. Very high manufacturing speeds are attainable.

3,691,011

LOADING DEVICE FOR FUEL ELEMENTS AND CONTROL RODS IN A NUCLEAR REACTOR

Joachim Krüger, Hans-Peter Schabert, Franz Schubert, and Robert Weber, Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Oct. 30, 1968, Ser. No. 771,898
Int. Cl. G21c 19/10
U.S. Cl. 176—30 16 Claims



Loading device for fuel elements and control rods in a nuclear reactor includes a vertically travelling double manipulator having respectively an independently actuable control rod manipulator and fuel element manipulator.

3,691,012

PROCESS FOR PRODUCING CITRIC ACID

Katsunobu Tanaka, Kazuo Kimura, and Ken Yamaguchi, Machida-shi, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

No Drawing. Continuation of application Ser. No. 692,690, Dec. 22, 1967. This application June 17, 1968, Ser. No. 737,373
Claims priority, application Japan, Dec. 28, 1966, 42/85,147
Int. Cl. C12d 1/04
U.S. Cl. 195—28 R 15 Claims

A process for producing citric acid by fermentation which comprises culturing a bacterium capable of assimilating hydrocarbons and belonging to the genus Arthrobacter in an aqueous nutrient medium containing n-paraffins as the principal source of carbon under aerobic conditions. *Arthrobacter paraffineus* is the preferred bacterium. The addition of calcium carbonate, urea, higher fatty acid salts or esters and methanol, as well as various kinds of surface active agents, to the medium helps to increase the yield of citric acid.

3,691,013

PROCESS FOR PRODUCING KETOSE

Shuzo Sakai, Toshio Miyake, and Yoshinori Sato, Okayama, Japan, assignors to Hayashibra Company, Okayama-shi, Okayama, Japan

No Drawing. Filed July 24, 1970, Ser. No. 58,146
Claims priority, application Japan, July 27, 1969, 44/59,262, 44/59,263
Int. Cl. C12b 1/00
U.S. Cl. 195—31 R 7 Claims

A process for producing ketose composed essentially of maltulose and maltotriulose by forming a sugar containing maltose and maltotriose as chief constituents from starch by the actions of α-1,6-glucosidase and β-amylase, isomerizing the aldoses with an alkaline solution, oxidizing the residual aldoses with a dehydrogenase, and then separating the acid thereby produced from ketose.

3,691,014

METHOD FOR PRODUCING PROTEASE

Masao Isono and Katsumi Tomoda, Hyogo, Koichi Miyata, Osaka, Kazutaka Maejima, Hyogo, and Reijiro Kodama, Kyoto, Japan, assignors to Tokeda Chemical Industries, Ltd., Higashiyodogawa-ku, Osaka, Japan

Continuation-in-part of application Ser. No. 641,001, May 24, 1967. This application Oct. 9, 1969, Ser. No. 868,280
Int. Cl. C12d 13/10
U.S. Cl. 195—62 5 Claims

A protease which has strong caseinolytic and fibrinolytic activities is abundantly produced by Serratia sp. E–15 when the microorganism is cultivated in a medium containing milk casein and soybean meal extract. The protease is recovered from the culture medium and purified, and the purified protease is used as an effective antiinflammatory agent.

3,691,015

METHOD FOR PURIFYING ENZYMES

Fritz Leidholdt, Kleinmachnow, Germany, assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed Mar. 18, 1970, Ser. No. 20,838
Int. Cl. C07g 7/026
U.S. Cl. 195—66 R 7 Claims

Inhibitor-free readily water-soluble enzymes are prepared by comminuting animal pancreas which has been frozen immediately after slaughtering, extracting said pancreas with an alcohol containing 1–2 carbon atoms, treating said extract with a water-insoluble liquid solvent selected from the group consisting of a butyl alcohol

and an ether, precipitating said enzyme from the resulting clear layer with a water-soluble solvent selected from the group consisting of an alcohol containing 1–2 carbon atoms and a ketone at a temperature below 10° C. and recovering the enzyme.

3,691,016
PROCESS FOR THE PREPARATION OF INSOLUBLE ENZYMES
Ravindra P. Patel, Boston, Mass., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Continuation-in-part of application Ser. No. 779,248, Nov. 26, 1968, which is a continuation-in-part of application Ser. No. 560,100, June 24, 1966. This application Apr. 17, 1970, Ser. No. 29,673
Int. Cl. A61k *19/00*; C07g *7/02*
U.S. Cl. 195—68 **14 Claims**

Insoluble enzymes are prepared by esterifying a carboxyl moiety with a compound capable of forming an activated ester with the carboxyl moiety and then condensing the activated ester with an amine moiety. At least a portion of either the carboxyl moiety or the amine moiety must be an enzyme. Exemplary of the ester forming compound is N-ethyl-5-phenyl isooxazolium-3-sulfonate.

3,691,017
MEANS AND METHOD FOR CHEMICAL ANALYSIS
George H. Brown, Bricktown, and Robert J. Ewing, Colts Neck, N.J., assignors to Worthington Biochemical Corporation, Freehold, N.J.
Filed May 6, 1970, Ser. No. 34,926
Int. Cl. C12k *1/04*
U.S. Cl. 195—103.5 R **25 Claims**

A rigid or semi-rigid disposable reaction container is disclosed for use in measuring the extent or rate of optical density change produced by a reaction, which container is provided with chamber means that preferably comprises a windowed chamber and an auxiliary chamber having openings communicating with the interior thereof and interconnected by a passage of small cross-section through which solution from the auxiliary chamber containing a dissolved key reactant may be injected into the reaction chamber to initiate the chemical reaction. There is further disclosure of a disposable reaction container that is in the form of a chambered slide wherein the opening or openings providing access to the chamber means preferably occurs in the margin of the slide. There also is disclosed a disposable reaction container in the form of separable sections which are adapted to have components of the reaction mixture deposited thereon in independent separated relation on predetermined surface areas, the components being deposited in solid form preferably by lyophilization before bringing the sections of the container together in face-to-face abutting secured relation and means being provided conducive to keeping the deposited components separate from each other in the common chamber. The disclosure also describes certain procedures including the loading of the sections of the reaction container with the separated quantities of solid components of the reaction mixture followed by uniting of the sections in face-to-face relation and thereafter, when making an analysis, introducing a suitable solvent and any other component or components of the reaction mixture, the reaction being initiated by the injection of a key component. For purposes of incubation, the disposable reaction container preferably comprises an incubation chamber which is used in controlling temperature as by placing therein a metal which is responsive to a thermostatically controlled field for the generation of heat.

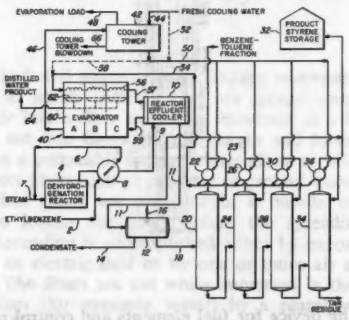
3,691,018
DIAGNOSTIC METHOD FOR PERIODONTAL DISEASE
Thomas F. McNamara, North Caldwell, N.J., and Richard A. Winer, Marblehead, Mass., assignors to Warner-Lambert Company, Morris Plains, N.J.
No Drawing. Filed Oct. 28, 1970, Ser. No. 84,901
Int. Cl. C12k *1/04*
U.S. Cl. 195—103.5 R **3 Claims**

A diagnostic method for the early detection of periodontal disease by determining the presence of β-D-galactosidase in crevicular fluids.

3,691,019
RETORTING APPARATUS WITH HOOD-SHAPED UNITARY COOLANT JACKET DISPOSED OVER SCREW CONVEYOR
Ray S. Brimhall, deceased, late of Salt Lake City, Utah, by Walker Bank and Trust Co., administrator, assignor to said Walker Bank and Trust Company, administrator of the estate of said Brimhall
Filed Feb. 16, 1970, Ser. No. 11,793
Int. Cl. C10b *7/10*
U.S. Cl. 202—118 **10 Claims**

The present invention comprises apparatus for processing carbonaceous fossil fuels such as oil shale and coal. This structure includes conveyor and heater means for progressively increasing the temperature of the carbonaceous materials, and partitioned successive chambers for collecting and condensing ascending vapors therefrom at respective heat zones. Means are provided for collecting and/or processing non-condensibles. Vaporization and condensation zones are provided with baffle means for optimizing recovery and separation. Means are also provided to ensure that a pre-soak time is provided, despite continuous through-put, wherein the carbonaceous material is pre-mixed with a hydrocarbon diluent. Discharge structure for spent material is canted upwardly to minimize escape of vapor out of the discharge area.

3,691,020
STYRENE PLANT WASTE HEAT UTILIZATION IN A WATER DESALINATION PROCESS
Richard E. Hughes, Belmont, Mass., assignor to The Badger Company, Inc., Cambridge, Mass.
Filed Aug. 20, 1971, Ser. No. 173,549
Int. Cl. B01d *3/02, 3/00, 1/28, 1/26, 15/00, 15/10*
U.S. Cl. 203—25 **12 Claims**



Low temperature level waste heat recovered from the dehydrogenation reactor effluent of a styrene manufactur-

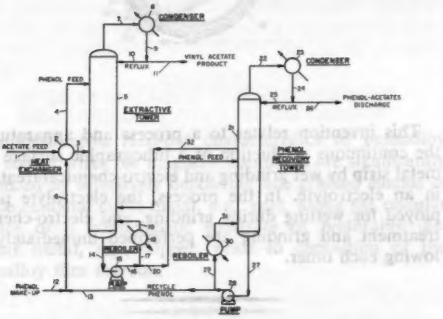
ing unit is used in the flash evaporator of a water desalination unit to produce pure water from contaminated or high mineral content water.

3,691,021

PROCESS FOR PURIFICATION OF VINYL ACETATE BY EXTRACTIVE DISTILLATION

Julian Feldman, Frank Lerman, and Franklyn D. Miller, Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Filed Mar. 26, 1970, Ser. No. 22,960
Int. Cl. C07c *67/06;* B01d *3/40*
U.S. Cl. 203—65 10 Claims



A process for purification of vinyl acetate containing residual but appreciable amounts of ethyl acetate which process is particularly adapted for separation and removal of the ethyl acetate therefrom by subjecting an impure, crude stream of vinyl acetate containing ethyl acetate and other impurities to extractive distillation using an aromatic hydroxy compound and more particularly, phenol, as the extractive solvent; a special feature being critical control of temperatures at the lower portion of the extractive distillation tower.

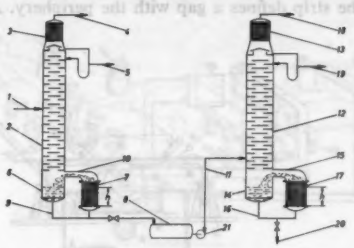
3,691,022

PROCESS FOR THE EVAPORATION OF PHTHALIC ANHYDRIDE FROM THE SUMP OF A DISTILLATION ZONE

Gerhard Keunecke, Geyen, and Johannes Krämer, Weiden, Germany, assignors to Chemiebau, Dr. A. Zieren GmbH & Co., KG, Cologne-Muengersdorf, Germany

Filed Dec. 15, 1969, Ser. No. 885,176
Claims priority, application Germany, Dec. 14, 1968, P 18 14 774.5
Int. Cl. B01d *1/12;* C07c *63/18*
U.S. Cl. 203—71 12 Claims

Crude phthalic anhydride produced by the oxidation of o-xylene is continuously distilled from the sump of a distillation column. Evaporation of the crude phthalic anhydride is effected in an evaporator which is in communication with the sump of the column by natural circulation from the bottom of the sump up through the evaporator and back to the sump. The crude phthalic anhydride leaving the evaporator has a concentration of at least fifty percent by weight of phthalic anhydride and trimellitic anhydride. The effective level of the crude



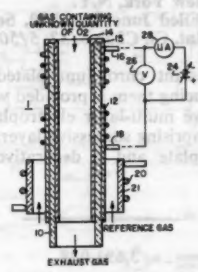
phthalic anhydride in the evaporator is 30—100% of the length of the evaporator pipes.

3,691,023

METHOD FOR POLAROGRAPHIC MEASUREMENT OF OXYGEN PARTIAL PRESSURE

Roswell J. Ruka and Armand J. Panson, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of abandoned application Ser. No. 773,540, Nov. 5, 1968. This application Dec. 15, 1970, Ser. No. 98,476
Int. Cl. G01n *27/46*
U.S. Cl. 204—1 T 5 Claims



An oxygen gauge which includes a solid electrolyte electrochemical cell in which oxygen is electrolyzed at a potential of sufficiently high value to obtain a limiting cell current determined by the rate at which oxygen diffuses to the electrode. This cell current is proportional to the oxygen partial pressure.

3,691,024

Patent Not Issued For This Number

3,691,025

Patent Not Issued For This Number

3,691,026

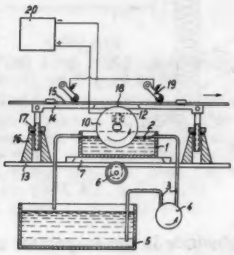
PROCESS FOR A CONTINUOUS SELECTIVE ELECTROPLATING OF STRIP

Eugen Dürrwächter, Pforzheim, and Otto Reichert, Eutingen, Germany, assignors to Dr. Eugen Dürrwächter Doduco, Pforzheim, Germany

Filed June 3, 1970, Ser. No. 42,974
Int. Cl. C23b *5/58, 6/68*
U.S. Cl. 204—28 4 Claims

An anode potential is applied to roller means partly immersed in an electroplating bath of liquid electrolyte.

The strip to be electroplated is arranged over the roller means so that the longitudinal direction of the strip is parallel to a tangent to the periphery of the roller means and the strip defines a gap with the periphery. A cathode



potential is applied to the strip. The strip is moved in said longitudinal direction and the roller means are rotated at the same time to entrain electrolyte from the bath and maintain said gap filled with electrolyte.

3,691,027

METHOD OF PRODUCING CORROSION RESISTANT CHROMIUM PLATED ARTICLES

Winslow H. Hartford, Fayetteville, and Edmund W. Smalley, Cicero, N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed June 16, 1970, Ser. No. 46,802

Int. Cl. C23b *5/32, 5/50*

U.S. Cl. 204—29 **10 Claims**

Corrosion resistant chromium plated articles and a method for producing them is provided wherein a decorative and protective multi-layer electroplate is applied on a basis metal comprising successive layers of a zinc-nickel alloy, a nickel plate and a decorative and protective chromium plate.

3,691,028

Patent Not Issued For This Number

3,691,029

CHROME PLATING OF TITANIUM

Louis W. Raymond, Fairfield, Conn., and Mark C. Gussack, Riverdale, N.Y., assignors to Superior Plating Company, Fairfield, Conn.

No Drawing. Continuation-in-part of abandoned application Ser. No. 30,223, Apr. 20, 1970. This application Mar. 5, 1971, Ser. No. 121,599

Int. Cl. C23b *5/52*

U.S. Cl. 204—37 R **18 Claims**

An adherent layer of wear-resistant hard chromium is applied to a titanium or titanium alloy part by first electroplating a layer of chromium on such part, then subjecting the part to heat treatment at a temperature from about 1600° F. to about 1900° F. for a very brief time (less than one minute), to cause diffusion bonding of the chromium to the titanium substrate, and then electroplating a relatively thick layer of hard chromium on the first chromium layer. The resulting hard chromium outer layer is firmly adherent, and the procedure avoids distortion of the titanium and minimizes deterioration of its physical properties. The fatigue strength of the titanium is increased by shot peening the initial chromium layer after diffusion bonding thereof to the titanium substrate prior to electroplating the outer chromium layer.

3,691,030

PROCESS AND APPARATUS FOR THE CONTINUOUS PRODUCTION OF A LITHOGRAPHIC SURFACE

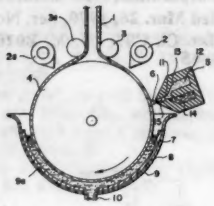
Joachim Stroszynski, 18 Buchenweg, 6201 Naurod, Germany

Filed Dec. 14, 1970, Ser. No. 97,944

Claims priority, application Germany, Dec. 15, 1969, P 19 62 728.2

Int. Cl. C23b *1/00, 5/58*

U.S. Cl. 204—32 R **4 Claims**



This invention relates to a process and apparatus for the continuous production of a lithographic surface on a metal strip by wet grinding and electro-chemical treatment in an electrolyte. In the process, the electrolyte is employed for wetting during grinding, and electro-chemical treatment and grinding are performed immediately following each other.

3,691,031

METHOD OF APPLYING A NIOBIUM LAYER TO A COPPER CARRIER BY ELECTROLYTIC DEPOSITION FROM FUSED SALTS

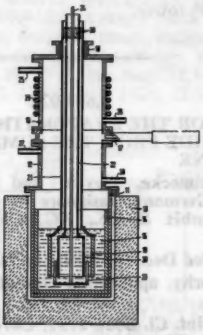
Walter Lugscheider, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Mar. 27, 1970, Ser. No. 23,358

Claims priority, application Germany, Mar. 29, 1969, P 19 16 293.7

Int. Cl. C23b *5/00*

U.S. Cl. 204—39 **15 Claims**



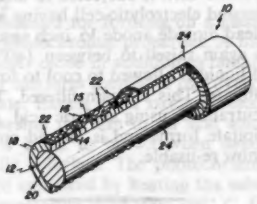
A niobium layer is produced on a copper carrier by electrolytically depositing niobium from a melt upon the copper surface. The surface has an average dimension across the grain of at least 1 mm. and the carrier is substantially free of elastic tension and substantially free of lattice defects.

3,691,032

PERMALLOY FILM PLATED WIRES HAVING SUPERIOR NONDESTRUCTIVE READ-OUT CHARACTERISTICS AND METHOD OF FORMING

Fred E. Luborsky, Schenectady, and Raymond E. Skoda, Scotia, N.Y., assignors to General Electric Company

Filed May 1, 1970, Ser. No. 33,631
Int. Cl. H01f
U.S. Cl. 204—40 11 Claims



Nondestructive read-out characteristics of permalloy film coated wires for magnetic memories are significantly enhanced by selectively depositing fine grained islands of a face centered cubic metal, e.g., gold, along the nodular surface of a nonmagnetic substrate of preferably dissimilar metal, e.g., copper, prior to deposition of the permalloy film thereon.

3,691,033

ADDITIVE FOR TIN ELECTROPLATING

Donald Kearey Howard, Levenshulme, Manchester, Brian Martin Thomas, Woodsmoor, Stockport/Cheshire, and Alan Francis Popplewell, Didsbury, Manchester, England, and Dario Matossi, Pamplona, Spain, assignors to Ciba-Geigy Corporation

No Drawing. Filed Feb. 24, 1970, Ser. No. 13,766
Int. Cl. C23b *5/14, 5/46*
U.S. Cl. 204—54 R 5 Claims

The present invention provides a tin-plating additive comprising a proportion within the range of from 0.0125% to 98.7% by weight based on the total weight of the additive of 4:4'-di [dimethylamino] diphenylmethane and one or more tin-plating additives functionally active in an acidic tin-plating bath.

3,691,034

Patent Not Issued For This Number

3,691,035

Patent Not Issued For This Number

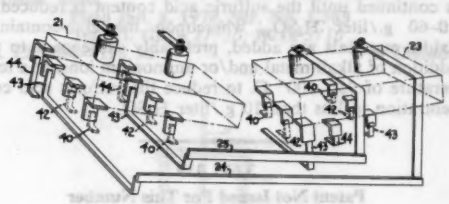
3,691,036

METHOD OF OPERATING A MERCURY-AMALGAM CATHODE ELECTROLYTIC CELL

James G. Peck, Jr., Lake Charles, La., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 9, 1970, Ser. No. 17,505
Int. Cl. B01k *1/00;* C01d *1/08*
U.S. Cl. 204—99 5 Claims

In the high current operation of a mercury-amalgam cathode electrolytic cell used for the electrolysis of aqueous alkali metal chloride solutions, an electromagnetic



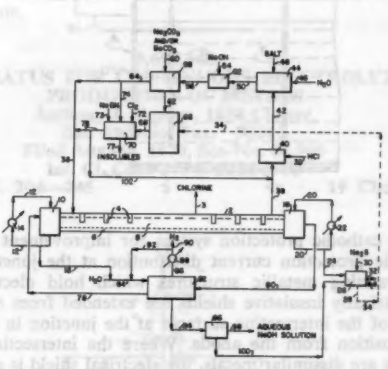
field is induced in the mercury-amalgam cathode to overcome the erratic performance of the cell.

3,691,037

MERCURY RECOVERY FROM CHLORINE CELLS UTILIZING MERCURY CATHODES

Lionel Joe Updyke, Squamish, British Columbia, Canada, assignor to FMC Corporation, New York, N.Y.

Filed Mar. 25, 1971, Ser. No. 127,899
Int. Cl. B01k *1/00;* C01d *1/08*
U.S. Cl. 204—99 9 Claims



In the process of producing chlorine and caustic from chlorine cells having mercury cathodes, liquid effluent streams unavoidably contain minor amounts of mercury. The mercury in these effluent streams is recovered in a simplified process by solubilizing it in a hypochlorite solution and reducing the dissolved mercury to elemental mercury in the chlorine cell.

3,691,038

PROCESS FOR THE RECOVERY OF ZINC FROM ZINC- AND IRON-CONTAINING MATERIALS

Adolf von Roepenack and Hans Wuetrich, Datteln, and Wilhelm Schmidt, Quellenkamp, Germany, assignors to Det Norske Zenkkompani A/S, Eitrheim, Odda, Norway

No Drawing. Filed Sept. 23, 1970, Ser. No. 74,895
Claims priority, application Germany, Sept. 25, 1969, P 19 48 411.8
Int. Cl. C22d *1/22;* C22b *19/00*
U.S. Cl. 204—119 9 Claims

A process for the recovery of zinc from materials, e.g. ores or concentrates and other substances containing zinc and iron, generally in the form of oxides, wherein the material is leached with excess hot sulfuric acid. The

acidity of the extracts is reduced by adding zinc oxide or like zinc-containing oxidic materials to precipitate iron. The leaching is carried out at 95°–100° C. with a leaching solution containing 180–220 g./liter H_2SO_4. Leaching is continued until the sulfuric acid content is reduced to 20–60 g./liter H_2SO_4, whereupon the zinc-containing oxidic materials are added, preferably subsequent to the addition of alkali-metal and/or ammonium ions, at a temperature of 95°–100° C. to reduce the sulfuric acid concentration to less than 10 g./liter H_2SO_4.

3,691,039

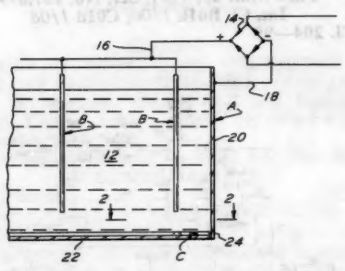
Patent Not Issued For This Number

3,691,040

ELECTRICAL SHIELD FOR CATHODIC PROTECTION SYSTEMS

Leon P. Sudrabin, Berkeley Heights, and Harry Neugold, Jr., Livingston, N.J., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Apr. 8, 1970, Ser. No. 26,485
Int. Cl. C23f *13/00*
U.S. Cl. 204—147 **10 Claims**



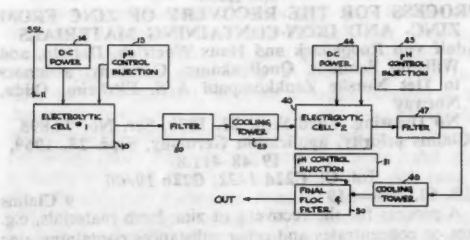
A cathodic protection system for improvement of cathodic protection current distribution at the junction of intersecting metallic structures which hold electrolyte. Electrically insulative shields are extended from at least one of the intersecting surfaces at the junction in spaced disposition from the anode. Where the intersecting surfaces are dissimilar metals, the electrical shield is applied to the surface of the less noble metal.

3,691,041

RECOVERING WATER FROM SPENT SULFITE LIQUOR

Bernard J. Stralser, 12726 E. Apache Pass, Spokane, Wash. 99206

Filed May 3, 1971, Ser. No. 139,655
Int. Cl. B01k *3/00*
U.S. Cl. 204—152 **4 Claims**



Spent sulfite liquor used in the calcuim base sulfite pulping process is diluted by about six parts water to one part of spent liquor as it exists in the pulp. To recover the water for re-use, the pH of the diluted liquor is first adjusted to about 6.4 by addition of 30% NaOH. The liquor is then put in an electrolytic cell having electrodes of mild steel about ½ inch apart and is subjected to direct current voltage of about 27–36 volts between electrodes with enough current to bring the temperature within a range of 140° F. to 200° F. in about two minutes. Current is cut off and the liquid is cooled for two to five minutes to enable a dark green precipitate to form. Then, the liquid is filtered. The recovered liquid is brought to a pH of 11 using NaOH and then is subjected to direct current of 30 volts in a second electrolytic cell having a mild steel cathode and a lead dioxide anode ½ inch apart, until the temperature is again raised to between 140° F. and 200° F. The treated liquid is allowed to cool to form another dark green precipitate. This is again filtered. Then, the cooled liquid is neutralized, using sulfuric acid, to a pH of 7. A white precipitate forms and is filtered out. The water remaining is now re-usable.

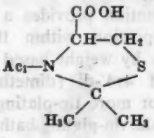
3,691,042

PROCESS FOR THE MANUFACTURE OF ESTERIFIED HYDROXY COMPOUNDS

Robert Burns Woodward, 12 Oxford St., Cambridge, Mass. 02138

No Drawing. Original application Jan. 26, 1967, Ser. No. 611,808, now Patent No. 3,498,996. Divided and this application Feb. 25, 1969, Ser. No. 802,226
Claims priority, application Switzerland, Feb. 3, 1966, 1,531/66; Feb. 22, 1966, 2,509/66; June 17, 1966, 8,831/66
Int. Cl. C07d *91/16*
U.S. Cl. 204—158 R **5 Claims**

The invention concerns a process for the introduction of an acyloxy group into the 5-position of a 5-unsubstituted 2,2-disubstituted 3-acyl-thiazolidine 4-carboxylic acid derivative by treatment with an alkoxy radical-forming oxidation reagent in the presence of a reagent capable of furnishing an acyloxy group by homolytic cleavage, more especially the introduction of an acyloxy, especially an acetyloxy group into the 5-position of an ester, particularly the methyl ester of an acid of the formula



in which Ac_1 is an acyl radical, primarily the tert.-butyloxycarbonyl group, by treatment with a lead-IV-acrylate, particularly lead tetraacetate, in the presence of an alkanol, particularly tert.-butanol. The compounds of the process are useful as intermediates for the preparation of 7-amino-cephalosporanic acid and its derivatives.

3,691,043

PREPARATION OF ACID HALIDES FROM PARAFFINS

Warren A. Thaler, Matawan, N.J., assignor to Esso Research and Engineering Company

No Drawing. Filed Sept. 9, 1965, Ser. No. 486,219
Int. Cl. C07c *51/58*
U.S. Cl. 204—163 HE **15 Claims**

Acid halides are prepared by reacting paraffins with carbon monoxide and halohydrocarbons; use of the halohydrocarbon allows formation of acid halide in preference to halide; products are useful as chemical intermediates, e.g., in the preparation of textile wetting agents.

3,691,044

Patent Not Issued For This Number

3,691,045

METHOD OF MAKING PHOTOCHROMIC FILMS ON GLASS SUBSTRATES

Morton L. Lieberman, Albuquerque, N. Mex., assignor to Corning Glass Works, Corning, N.Y.

No Drawing. Filed Mar. 15, 1971, Ser. No. 124,495
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 10 Claims

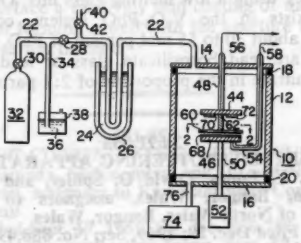
A method is disclosed for forming on a glass substrate a film exhibiting photochromic properties. A mixed oxide film containing silver oxide in addition to tantalum oxide, tungsten oxide, or mixtures thereof is reactively sputtered on a glass substrate. Excess silver oxide is removed from the film by immersing the film in an acid solution until the film, which is black to brown when deposited, becomes substantially colorless. The photochromic properties of the film are enhanced by heating the substrate-film composite at a temperature of at least 300° C. for at least ½ hour.

3,691,046

METHOD FOR MANUFACTURING A SUPERCONDUCTIVE COIL ELEMENT

Tsuneo Okada, Chiba-ken, Yutaka Onodera, Takeshi Mitsuoka, Yukinori Saito, Yoshio Muto, and Takeshi Anayama, Sendai-shi, and Ko Yasukochi, Tokyo, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Sept. 25, 1969, Ser. No. 860,929
Claims priority, application Japan, Feb. 28, 1969, 44/15,520, 44/15,521, 44/15,522
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 1 Claim



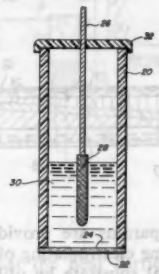
A superconductive coil element comprising a layer of superconductive material and a layer of insulating material, each alternately arranged in a helical form centered about a common axis with their adjacent turns tightly attached to each other. The superconductive coil element exhibits a maximum critical current density when an electromagnetic field acting on the surface of said superconductive layer is substantially at an angle of 90°. The method of manufacture comprises relatively disposing the substrate and evaporation sources which respectively consists of said superconductive material and insulating material with the adjacent planes of the substrate and evaporation sources facing each other, interposing a perforated shield between the substrate and the sources, rotating the substrate and evaporation sources relative to each other and evaporating the superconductive material and insulating material at the same time separately from each other to successively deposit same on an annular region of the substrate.

3,691,047

MEMBRANE ELECTRODE

James W. Ross and Martin S. Frant, Newton, Mass., assignors to New England Merchants National Bank, Boston, Mass.

Filed Jan. 8, 1970, Ser. No. 1,365
Int. Cl. G01n *27/30;* B01k *3/10*
U.S. Cl. 204—195 M 6 Claims



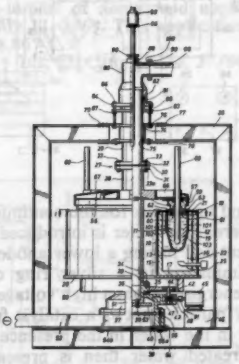
An ion-sensitive membrane for potentiometric electrodes, the membrane being a gel in which the solid phase is an inert polymer such as cellulose triacetate and the liquid phase is an ion-exchange liquid such as calcium (bis-dibromoleylphosphate)$_2$ dissolved in dioctylphenylphosphate.

3,691,048

APPARATUS FOR CONTINUOUS ELECTROLYTIC PRODUCTION OF METALS

Anthony J. Yznaga, 1638 Clower, San Antonio, Tex. 78201

Filed Aug. 26, 1970, Ser. No. 66,960
Int. Cl. C23b *5/74;* C22d *3/02*
U.S. Cl. 204—245 19 Claims



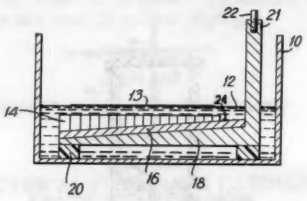
An apparatus for the continuous electrolytic production of metals from fused baths more dense than the metals comprising an annular cell for containing a fused bath in which the walls of the cell constitute the main cathode, at least one anode suspended in the cell, means to rotate the anode through the annular cell and a separator to continuously remove from the cell the metal produced at the cathode. In its more preferred embodiments, the apparatus includes a continuous unloader for removing the metal from the separator, a means for continuously removing from the bottom of the cell sludge more dense than the fused bath, a continuous feed means and a means to remove from the cell gaseous components released in the electrolysis process.

3,691,049

WIRE AND STRIP LINE ELECTROPLATING

Frederick Walter Eppensteiner, Southfield, and Richard E. Woehrle, Birmingham, Mich., assignors to M & T Chemicals Inc., New York, N.Y.

Filed Apr. 15, 1970, Ser. No. 28,758
Int. Cl. C23b 5/68, 5/10
U.S. Cl. 204—206 12 Claims



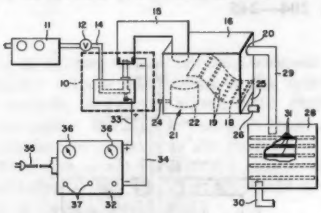
Methods and apparatus are provided for high speed wire and/or strip line electroplating of metals such as tin and zinc on a metal substrate by utilizing in the anode assembly therefor a combination of the plating metal as the anode and an anode support comprised essentially of a member selected from the group consisting of tantalum, niobium, and mixtures thereof.

3,691,050

APPARATUS AND METHOD FOR THE REMOVAL OF IMPURITIES FROM LIQUIDS

David E. Sayre, Austin, Tex., assignor to Sayreco, Inc., Austin, Tex.

Filed Feb. 25, 1970, Ser. No. 14,052
Int. Cl. C02c 5/12; C22d 1/04
U.S. Cl. 204—219 8 Claims



The method and apparatus for the continuous purification of water wherein the water is introduced under pressure to a treatment cell having a lower anode of mercury and a stack culminating in a silver ring cathode, the electrodes being energized from a high voltage DC source. Diffused mercury particles act as a catalyst for the flocking of impurities in the water in the presence of the electric field. The treated water then is presented in turn to a settlement tank and an activated carbon filter for removal of solids and further treatment for taste and odor.

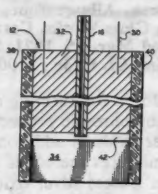
3,691,051

POROUS ELECTRODE HAVING CAVITY WITH IMPERVIOUS DOME

Keith A. Williams, Bartlesville, Okla., assignor to Phillips Petroleum Company

Original application June 24, 1968, Ser. No. 739,506. Divided and this application Aug. 28, 1970, Ser. No. 67,884
Int. Cl. B01r 3/04, 3/08
U.S. Cl. 204—284 17 Claims

In an electrochemical process, the reaction takes place within the confines of a porous electrode element. The bottom of this electrode element has a cavity open to the bulk of the electrolyte. Gaseous or vaporous feed materials are introduced into this cavity; a portion of the inner surfaces of the walls of this cavity are sufficiently impervious so as to cause a gas cap to form in the upper portion of the cavity. This allows the feed materials to be



distributed evenly throughout the entire horizontal span of the cavity. The feed materials then pass out of the cavity and into and upward through the porous reaction section of the electrode without contact with the bulk of the electrolyte and are converted to the desired products while within the confines of the electrode element.

3,691,052

VALUE METAL BASE ELECTRODE COATED WITH $Pb_2Ru_2O_6$ OR $Pb_2Ir_2O_6$

Robert C. Langley, Millington, N.J., assignor to Engelhard Minerals & Chemicals Corporation

No Drawing. Filed Jan. 7, 1971, Ser. No. 104,797
Int. Cl. B01r 3/04
U.S. Cl. 204—290 F 6 Claims

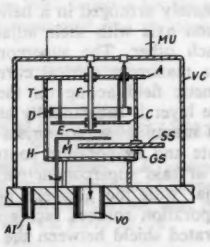
Electrolysis of brines is accomplished with anodes having an operative surface of lead ruthenate or lead iridate. The anodes are particularly effective for the production of chlorine. It has been found that lead ruthenate or lead iridate powder may be bonded to a value metal substrate by using a low melting glass flux. One group of glasses exists in the V_2O_5-PbO system, consisting of V_2O_5 plus about 30 to 55 mol percent of PbO. Other types of fluxes are lead borosilicate glass or lead borate:bismuth subnitrate in the proportion of 2:1 parts by weight.

3,691,053

GETTER-SPUTTERING APPARATUS

David W. F. James, David O. Spiller, and Harvey D. Coltman, Bangor, Wales, assignors to University College of North Wales, Bangor, Wales

Filed Dec. 29, 1969, Ser. No. 888,493
Claims priority, application Great Britain, Jan. 2, 1969, 380/69; Nov. 20, 1969, 56,959/69
Int. Cl. C23c 15/00
U.S. Cl. 204—298 7 Claims



Apparatus and method for getter-sputtering. Material is sputtered from a cathode onto a substrate at low pressure in an inert atmosphere. Sputtering is effected in a

sputter space to which there is access of gas only by way of a gettering antechamber or space. Gettering is effected continuously in the antechamber while sputtering is taking place. The sputter space may be arranged co-axially within the gettering space either in a planar arrangement or an arrangement of co-axial chamber with a dividing wall. Alternatively, the gettering chamber may be arranged above the sputter chamber.

3,691,054

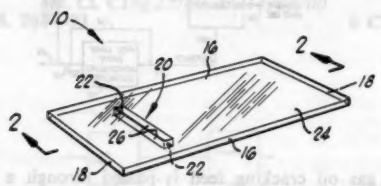
STABILIZING MEDIA TEMPLATE

Leo P. Cawley, 550 N. Hillside, Wichita, Kans. 67208

Filed Feb. 9, 1970, Ser. No. 9,624

Int. Cl. B01k *5/00*

U.S. Cl. 204—299 **5 Claims**



This invention is a template structure for electrophoresis and immunoelectrophoresis processes including a relatively thin sheet member inert to and adapted to receive a stabilizing media gel on one side and having an aperture therein. More particularly, this invention relates to a thin sheet member with an aperture and adapted to receive on a surface a relatively thin coating of the stabilizing media gel forming a well with the aperture to receive a sample of serum therein.

3,691,055

METHOD OF COATING STEEL SHEET SURFACES

Motoharu Hamada, Nishinomiya, and Hiroshi Nakagawa, Kobe, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Sept. 17, 1969, Ser. No. 858,782

Claims priority, application Japan, Sept. 27, 1968, 43/69,758

Int. Cl. C23b *9/00, 11/00*

U.S. Cl. 204—385 **12 Claims**

A method of coating steel sheet surfaces with double coating films having a high corrosion resistance. Each steel sheet is at first coated with a first film mainly consisting of hydrous chromium oxides by electrolytic treatment with chromic acid. An aluminum film is coated on the first film by vacuum evaporation.

3,691,056

PROCESS FOR RETORTING OIL SHALE IN THE ABSENCE OF SHALE ASH

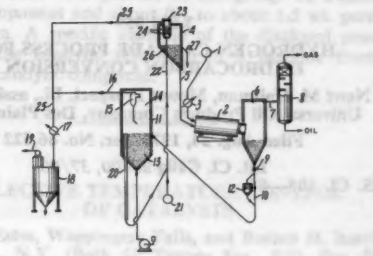
John H. Barney, Denver, and Franklin B. Carlson, Bloomfield, Colo., assignors to The Oil Shale Corporation, New York, N.Y.

Filed Apr. 13, 1971, Ser. No. 133,507

Int. Cl. C10b *53/06*

U.S. Cl. 208—11 **5 Claims**

In the pyrolysis of oil shale to shale oil, the loss of the shale oil product by sorption on porous shale ash in the pyrolysis zone is prevented by attriting the shale ash particles to fines and elutriating the fines from the heat



carrier circuit so that the heat carriers recyled to and used in the pyrolysis zone are substantially free of shale ash.

3,691,057

Patent Not Issued For This Number

3,691,058

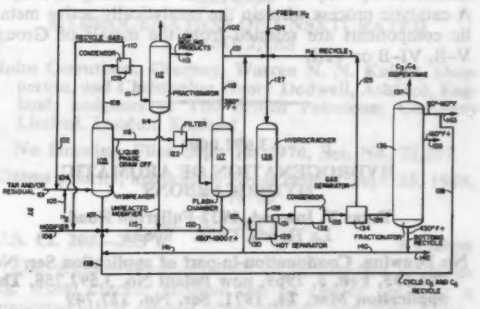
PRODUCTION OF SINGLE-RING AROMATIC HYDROCARBONS FROM GAS OILS CONTAINING CONDENSED RING AROMATICS AND INTEGRATING THIS WITH THE VISBREAKING OF RESIDUA

Glen P. Hammer, Baton Rouge, and Ralph B. Mason, Denham Springs, La., assignors to Esso Research and Engineering Company

Continuation-in-part of abandoned application Ser. No. 840,986, July 11, 1969. This application Apr. 15, 1970, Ser. No. 28,867

Int. Cl. C10g *31/14, 37/04*

U.S. Cl. 208—73 **8 Claims**



Single-ring aromatic hydrocarbons are maximized by hydrocracking a heavy hydrocarbon feed boiling below 1050° F. containing polynuclear aromatics or their precursors over zeolite base hydrocracking catalysts at low conversions of 5 to 40% and recycling the 90–160° F. and 350° F.+ fractions to extinction. Integrating this step with the visbreaking of residua in presence of a hydro-

carbon modifier or free-radical acceptor in which the 90–160° F. fraction from the hydrocracking is used at least in part as the modifier is included.

3,691,059

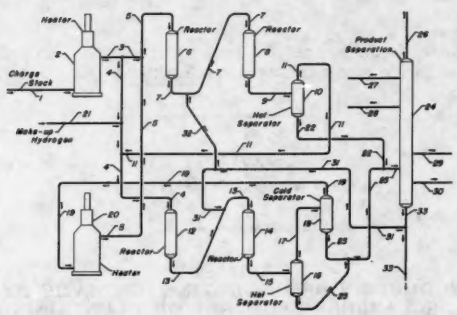
HYDROGEN-CASCADE PROCESS FOR HYDROCARBON CONVERSION

Newt M. Hallman, Mount Prospect, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Aug. 24, 1970, Ser. No. 66,522

Int. Cl. C10g *23/00, 37/00*

U.S. Cl. 208—80 10 Claims



An economical hydrocarbon hydroprocess of modified hydrogen circulation which effects savings in compression by hydrogen cascade in a process requiring the recycling of hydrogen. Particularly directed for utilization hydrocracking, the present process is applicable to the hydrogenation of aromatic nuclei, the ring-opening of cyclic hydrocarbons for the production of jet fuel components, desulfurization, denitrification, hydrogenation, etc. The process involves separately reacting portions of the fresh feed charge stock in individual reaction systems interconnected by way of the flow of circulating hydrogen. A catalytic process wherein the catalytically active metallic components are selected from the metals of Groups V–B, VI–B or VIII.

3,691,060

HYDROGENATION OF AROMATIC HYDROCARBONS

Texas V. Inwood, 1932 Fullerton Road, La Habra, Calif. 90631

No Drawing. Continuation-in-part of application Ser. No. 796,895, Feb. 5, 1969, now Patent No. 3,592,758. This application Mar. 24, 1971, Ser. No. 127,749

Int. Cl. C10g *23/04*

U.S. Cl. 208—89 16 Claims

Aromatic hydrocarbon feedstocks containing organic sulfur compounds are hydrogenated in a "single-stage" process, utilizing a dual-catalyst hydrogenation system. The feed is first hydrofined over a sulfactive catalyst selective for the hydrodecomposition of organic sulfur compounds, and total effluent is then hydrogenated over a sulfur-sensitive Group VIII noble metal hydrogenation catalyst active for the hydrogenation of aromatic hydrocarbons.

3,691,061

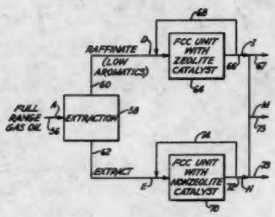
CRACKING OF SOLVENT EXTRACTED GAS OIL WITHOUT ADDED HYDROGEN

Robert W. Koch, Verona, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed July 23, 1970, Ser. No. 57,518

Int. Cl. C10g *21/00*

U.S. Cl. 208—87 5 Claims



A gas oil cracking feed is passed through a solvent extraction zone to separate an aromatics-lean raffinate from an aromatics-rich extract. The aromatics-lean raffinate is charged to a fluid zeolite cracking zone without added hydrogen and the aromatics-rich extract is charged to a fluid nonzeolite cracking zone without added hydrogen.

3,691,062

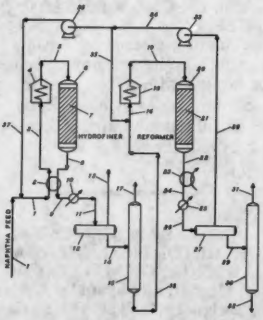
COMBINED HYDROFINING-REFORMING PROCESS

Willard M. Haunschild, Walnut Creek, Robert L. Jacobson, Pinole, and Charles S. McCoy, Orinda, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation of abandoned application Ser. No. 789,517, Jan. 7, 1969. This application June 25, 1971, Ser. No. 163,512

Int. Cl. C10g *23/00*

U.S. Cl. 208—89 1 Claim



A combination hydrofining-reforming process wherein a naphtha feedstock low in sulfur and nitrogen is hydro-

fined, without substantial cracking, in a reaction zone in the presence of once-through hydrogen to convert sulfur and nitrogen to hydrogen sulfide and ammonia, followed by separation of the hydrogen sulfide and ammonia and reforming of the hydrofined naphtha with a catalyst comprising platinum and rhenium associated with an alumina-containing support. The reforming effluent is processed to recover gasoline and hydrogen-rich gas, a portion of the hydrogen-rich gas being used in the hydrofining reaction zone as the once-through hydrogen.

3,691,063

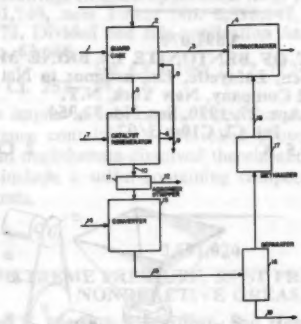
RESIDUAL FUEL OIL HYDROCRACKING PROCESS

Merritt C. Kirk, Jr., Thornton, Pa., assignor to Sun Oil Company, Philadelphia, Pa.

Filed Mar. 18, 1971, Ser. No. 125,644

Int. Cl. C10g *25/00, 31/14, 37/00*

U.S. Cl. 208—91 **6 Claims**



Process of hydrocracking residuum containing petroleum wherein the metals which poison the hydrocracking catalyst are removed in a guard case containing an acid catalyst along with the asphaltenes contained in the residuum. The guard case catalyst is regenerated with steam and oxygen to maximize hydrogen production obtainable by partial oxidation of the asphaltenes, and which hydrogen is then used in the hydrocracking process.

3,691,064

HYDROCARBON CONVERSION WITH A MULTICOMPONENT CATALYST

John C. Hayes, Palatine, and Ernest L. Pollitzer, Skokie, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Original application Apr. 24, 1968, Ser. No. 723,895. Divided and this application July 31, 1970, Ser. No. 60,156

Int. Cl. C10g *35/08*

U.S. Cl. 208—136 **16 Claims**

Hydrocarbons are converted by contacting them and hydrogen, at hydrocarbon conversion conditions, with a catalytic composite comprising a combination of a platinum group component, a rhenium component, a group VI transition metal component and a halogen component with an alumina carrier material in amounts sufficient to result in the composite containing, on an elemental basis, about 0.05 to about 1 wt. percent of the platinum group metal, about 0.05 to about 1 wt. percent rhenium, about 0.01 to about 1 wt. percent of the group VI transition metal component and about 0.1 to about 1.5 wt. percent of halogen. A specific example of the disclosed process involves the catalytic reforming of a gasoline fraction with this catalytic composite.

3,691,065

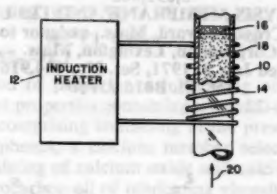
SELECTIVE TEMPERATURE CONTROL OF CATALYSTS

John H. Estes, Wappingers Falls, and Burton H. Bartley, Fishkill, N.Y. (Both % Texaco Inc., P.O. Box 509, Beacon, N.Y. 12508)

Filed July 17, 1970, Ser. No. 55,650

Int. Cl. C10g *15/00*

U.S. Cl. 208—159 **6 Claims**



Conducting a catalytic reaction with a dual function catalyst comprising two catalytic constituents, one of which is caused to function at a somewhat more elevated temperature than the other catalytic constituent by the action of a radio frequency field sufficient to selectively raise the temperature of the first named catalytic constituent a substantial amount.

3,691,066

HYDROGENATION OF UNSATURATED GASOLINES

John Carruthers, Chertsey, Warren N. N. Knight, Shepperton, and Christopher Henry Dodwell, Ashford, England, assignors to The British Petroleum Company Limited, London, England

No Drawing. Filed Sept. 10, 1970, Ser. No. 71,197

Claims priority, application Great Britain, Sept. 23, 1969, 46,779/69

Int. Cl. C10g *9/12*

U.S. Cl. 208—255 R **9 Claims**

The selective hydrogenation of unsaturated gasolines e.g. steam cracker gasoline can be carried out over a supported nickel catalyst at 50–250° C., 200–3000 p.s.i.g., 0.2–10 v./v./hr. and 200–5000 s.c.f. of H_2/B even when the feedstock contains 10–3000 p.p.m. wt. of mercaptan sulphur. Poisoning of the catalyst by the mercaptan sulphur is prevented because the mercaptans are converted to thiophenes during processing to a level of below 30 p.p.m. wt. of mercaptans in the product, particularly below 10 p.p.m. wt. The diene content is reduced from 4–55% wt. to below 0.5% wt. Total sulphur content of the feedstock is 0.1–1.5% wt., of which 0.003–1.0% wt. may

be thiophenic sulphur and such feedstocks may be produced by the thermal cracking of high sulphur content, high boiling petroleum fractions. They may be inhibited with a phenolic inhibitor.

The preferred catalyst is 1–50% wt. nickel on sepiolite and presulphiding of the catalyst is optional.

Runs of over 500 hours, particularly over 1000 hours are possible.

3,691,067

PRODUCTION OF LUBRICATING OILS BY HYDROTREATING AND DISTILLATION

William B. Ashton, Nederland, Tex., and Herbert C. Morris, Wappingers Falls, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 755,746, Aug. 27, 1968. This application Mar. 4, 1970, Ser. No. 16,558

Int. Cl. C10g *23/00*

U.S. Cl. 208—264 8 Claims

A narrow cut lubricating oil stock, particularly a low grade stock, is hydrotreated and then fractionated to produce a light fraction of medium viscosity index and a heavy fraction of high viscosity index.

3,691,068

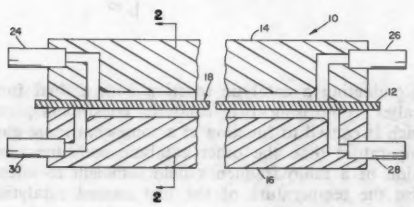
DIALYSIS MEMBRANE AND ITS USE

Robert A. Cross, Harvard, Mass., assignor to Amicon Corporation, Lexington, Mass.

Filed Jan. 8, 1971, Ser. No. 104,916

Int. Cl. B01d *13/00*

U.S. Cl. 210—22 20 Claims



Subjecting a dialyzable liquid (such as blood) to dialysis (hemodialysis) by providing an anisotropic microporous polysulfone polymer membrane having a barrier layer at a surface thereof and a more porous support layer integral with the barrier layer, the barrier and support layers being a continuous uninterrupted polymer phase, which membrane has a dialytic resistance to sodium chloride less than about 50 min./cm. and a total ultrafiltration flux between about 3×10^{-5} and 1×10^{-6} ml./(cm.^{2} x min. x mm.$_{Hg}$), contacting the barrier layer surface of this membrane with the dialyzable liquid, and contacting the other side of the membrane with a solvent for the dialyzable components of such liquid.

3,691,069

PROCESS AND DEVICE FOR MAKING FABRICS WITH NON-WOVEN PILE

Olaf Ferdinand Walser, Raditschgasse, 653-Vaduz, Liechtenstein

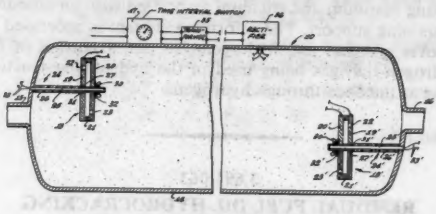
Continuation of abandoned application Ser. No. 584,249, Oct. 4, 1966. This application May 19, 1971, Ser. No. 135,262

Claims priority, application Belgium, Oct. 11, 1965, 18,931; Oct. 29, 1965, 670,784

Int. Cl. D04b *1/02*

U.S. Cl. 156—72 5 Claims

A process for making fabrics with non-woven pile where a continuous thread or band is fed to a parallel passage having two parallel support bands each carrying a layer of adhesive. The thread or fabric is prefolded with a flexible bladelet and then driven with a substantially circular movement by folder blades against the support band.



After having produced the desired adhesive connection of the fabric and the band, the adhesive is cured and the support bands are separated to produce the finished product.

ERRATUM

For Class 208—210 see:
Patent No. 3,691,152

3,691,070

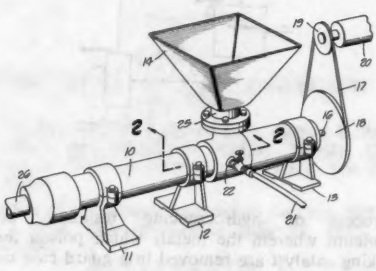
EMPLOYMENT OF BENTONITE IN BRINE MUDS

William C. Pippen, Lafayette, La., assignor to National Lead Company, New York, N.Y.

Filed Apr. 27, 1970, Ser. No. 32,054

Int. Cl. C10m *3/02*

U.S. Cl. 252—8.5 B 2 Claims



A brine drilling mud is formed by a two-step process comprising prehydrating bentonite with fresh water in an axial, positive displacement pump so as to form a prehydrated bentonite-water mixture, which is subsequently incorporated with the brine phase so as to form the desired brine mud.

3,691,071

PELLETED CARBON BLACK CONTAINING SURFACTANT

Myron L. Corrin, Fort Collins, Colo., assignor to Phillips Petroleum Company

No Drawing. Application July 28, 1969, Ser. No. 845,543, now Patent No. 3,559,735, dated Feb. 2, 1971, which is a continuation-in-part of application Ser. No. 688,651, Dec. 7, 1967. Divided and this application Apr. 13, 1970, Ser. No. 28,006

Int. Cl. E21b *43/20*

U.S. Cl. 252—8.55 D 11 Claims

Pelleted carbon black, and process for preparing same, containing at least one of (a) an oil-displacing surfactant and (b) a suspending and stabilizing surfactant. The pelleted carbon black and surfactants are useful in the production of oil from an oil stratum by water flooding.

3,691,072

SOLUBLE OIL COMPOSITION

Le Roy W. Holm, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Continuation-in-part of application Ser. No. 713,294, Mar. 5, 1968, now Patent No. 3,500,918. This application Dec. 31, 1969, Ser. No. 889,739

Int. Cl. E21b *43/16, 43/20*

U.S. Cl. 252—8.55 D 16 Claims

A soluble oil composition comprising a mixture of liquid hydrocarbon, surface active agent and secondary butyl alcohol is disclosed. The composition is particularly useful as a displacement fluid in a flooding process for the recovery of oil. The soluble oil composition can be substantially anhydrous, or it can contain water present as a water-in-oil microemulsion.

3,691,073

LUBRICANT COMPOSITION CONTAINING MOLYBDENUM NAPHTHENATE

Melvin L. Larson, Royal Oak, Mich., assignor to American Metal Climax Inc.

No Drawing. Original application Aug. 12, 1968, Ser. No. 751,740, now Patent No. 3,598,847, dated Aug. 10, 1971. Divided and this application Aug. 13, 1970, Ser. No. 63,618

Int. Cl. C10m *1/12, 1/24*

U.S. Cl. 252—24 6 Claims

An improved lubricant composition comprising an oily substance containing a controlled proportion of molybdenum naphthenate dissolved therein and which may further include a sulfur-containing compound in controlled amounts.

3,691,074

EXTREME PRESSURE, RUST PREVENTIVE NONREACTIVE GREASES

Joseph F. Messina, Havertown, and Henry Gisser, Philadelphia, Pa., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Apr. 6, 1971, Ser. No. 131,773

Int. Cl. C10m *7/16, 7/28*

U.S. Cl. 252—25 5 Claims

Grease compositions comprising perfluoroalkylpolyether (PFAPE) fluids thickened with polytetrafluoroethylene (PTFE) for use with liquid fueled rocket engines, the grease including a small quantity of rust preventing sodium nitrite. The greases exhibit a very unexpected and significant improvement in extreme pressure characteristics, are rust preventive, and are nonreactive upon contact with conventional fuels and oxidizers, and at high impact energies in the presence of liquid oxygen and other oxidizers used in conventional rocket engines.

3,691,075

PROCESS FOR PREPARING BARIUM-CONTAINING DISPERSION

Roy C. Sias, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

No Drawing. Continuation-in-part of application Ser. No. 826,708, May 21, 1969. This application Aug. 31, 1970, Ser. No. 68,566

Int. Cl. C10m *1/40, 1/24*

U.S. Cl. 252—33 34 Claims

Process for preparing a highly basic barium-containing dispersion wherein the process comprises: (a) forming an admixture of oil-soluble dispersing agent (e.g. sulfonic acid), nonvolatile diluent, process solvent and water, (b) adding to the admixture a solution of basic barium compound (e.g. BaO) in an alcohol (e.g. methanol or methoxy ethanol)—from about 55 to less than about 90%, preferably from about 65 to about 75%, of the total requirement is added, (c) passing CO_2 through the admixture, (d) adding to the carbonated admixture a solution of basic barium compound in alcohol (remainder of the requirement), (e) removing volatiles and (f) carbonating the admixture.

The salient features of the process are (1) adding from about 55 to less than about 90%, preferably from about 65 to about 75%, of the alcoholic solution of basic barium compound prior to carbonation and (2) the temperature at which the first carbonation is conducted.

3,691,076

PROCESS FOR PREPARING HYDROCARBON LUBRICATING OIL CONTAINING CALCIUM ALKYLPHENOLATE

Harry Chafetz, Poughkeepsie, William H. Canning, Wappingers Falls, and Bertrand G. Morissette, Beacon, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed Sept. 14, 1970, Ser. No. 72,121

Int. Cl. C10m *1/20, 1/54*

U.S. Cl. 252—42.7 9 Claims

A method of preparing a lubricating oil composition of detergent properties containing a normal calcium alkylphenolate comprising contacting in the presence of acetic acid, alkylphenol, a calcium member selected from the group consisting of calcium oxide and calcium hydroxide and a hydrocarbon oil of lubricating viscosity.

3,691,077

LUBRICANT COMPOSITION

Robert Earl Wann, 3933 Thimbleglen Drive 45239; Denzel Allan Nicholson, Miami Valley Lab., P.O. Box 39175 45239; and Ted Joe Logan, Ivorydale Technical Center 45217, all of Cincinnati, Ohio

No Drawing. Original application Sept. 26, 1968, Ser. No. 762,966. Divided and this application Mar. 10, 1971, Ser. No. 123,091

Int. Cl. C10m *1/30*

U.S. Cl. 252—54.6 6 Claims

Lubricant compositions comprising a major amount of a lubricating base fluid and a minor amount of extreme pressure additives which contain either a methylene, monohalomethylene or dihalomethylene group between two moieties, selected from the group consisting of phosphono, dihydrocarbylphosphoryl, phenyl, substituted phenyl, keto, cyano, and carboxylate ester moieties.

3,691,078

OIL COMPOSITIONS CONTAINING ETHYLENE COPOLYMERS

Thomas Emmett Johnston and Earl Eugene Sommers, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 785,346, Dec. 19, 1968. This application Nov. 25, 1969, Ser. No. 879,902

Int. Cl. C10m *1/18*

U.S. Cl. 252—59 6 Claims

Improved mineral oil compositions comprising a neutral, non-volatile, mineral oil, a pour point depressant

and a viscosity index improver consisting of an oil-soluble, substantially linear, hydrocarbon copolymer containing 25 to 55 weight percent polymerized ethylene units and 75 to 45 weight percent polymerized comonomer units, said commonomer selected from the group consisting of terminally unsaturated straight chain monoolefins of 3 to 12 carbon atoms, ω-phenyl-1-alkenes of 9 to 10 carbon atoms, 2-norbornene, terminally unsaturated non-conjugated diolefins of 5 to 8 carbon atoms, dicyclopentadiene, 5-methylene-2-norbornene, and mixtures thereof, said copolymer having a pendent index of about 18 to 33, an average pendent size not exceeding 10 carbon atoms, an average chain length of 2,700 to 8,800 carbon atoms and an inherent viscosity of about 0.7 to 1.8 as measured on a 0.1 weight percent solution in tetrachloroethylene at 30° C.

3,691,079

PIEZOELECTRIC OXIDE MATERIALS

Noboru Ichinose, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed June 10, 1971, Ser. No. 151,643

Claims priority, application Japan, June 13, 1970, 45/50,716

Int. Cl. C04b *35/46*

U.S. Cl. 252—62.9 **1 Claim**

A piezoelectric oxide material essentially consisting of a solid solution having a composition of the general formula:

$$(1-x)PbTiO_3—xPb(Me_{1/3}Nb_{2/3})O_3$$

where x ranges 0.02 to 0.20 and Me denotes at least one metal selected from the group consisting of Cd and Cu.

3,691,080

NITRITES IN VINYL CHLORIDE POLYMERIZATION

Johann Bauer, Kurt Fendel, and Thomas Balwe, Burghausen, Upper Bavaria, Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Germany

No Drawing. Filed Sept. 22, 1970, Ser. No. 74,468

Claims priority, application Germany, Sept. 24, 1969, P 19 48 358.0

Int. Cl. C08f *1/58*

U.S. Cl. 260—78.5 CL **6 Claims**

Process for polymerizing vinyl chloride, and for copolymerizing vinyl chloride with up to 50% by weight of other ethylenic unsaturated monomers, in aqueous phase containing a suspension agent, in the presence of an oil-soluble catalyst, which comprises heating the suspension to a temperature of 30 to 80° C. at a pressure of 1 to 15 atmospheres in the presence of 0.0001 to 0.1% by weight, referred to monomers, of inorganic or organic nitrites.

3,691,081

DETERGENT COMPOSITIONS

Eric William Thompson and Michael Charles Marshall, Norton, Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Nov. 9, 1970, Ser. No. 88,175

Claims priority, application Great Britain, Nov. 26, 1969, 57,861/69

Int. Cl. C11d *1/825*

U.S. Cl. 252—89 **4 Claims**

A detergent composition primarily adapted for use as an industrial surfactant which comprises a liquid substantially biodegradable mixture or blend of an ethoxylated detergent range alcohol and an ethoxylated plasticiser range alcohol, the said mixture or blend including ethoxylates of alcohols derived by hydroformylation of mixed olefines.

3,691,082

LOW-FOAMING RINSING, WASHING AND CLEANING COMPOSITIONS

Hans-Josef Stimberg, 190 Einsteinstrasse, 404 Neuss, Germany; Joachim Galinke, 30 Am Nettchesfeld, 4 Dusseldorf-Holthausen, Germany; and Edmund Schmadel, 23 August-Burberg-Strasse, 402 Mettmann, Germany

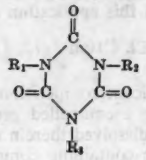
No Drawing. Filed Dec. 9, 1970, Ser. No. 96,673

Claims priority, application Germany, Dec. 31, 1969, P 19 65 643.0, P 19 65 640.7

Int. Cl. C11d *3/28, 7/32, 9/42*

U.S. Cl. 252—98 **14 Claims**

Low-foaming rinsing, washing and cleaning compositions comprising (a) from 90% to 99.9% by weight of at least one compound having a cleaning or complexing action and (b) from 0.1% to 10% by weight of at least one foam-inhibiting isocyanurate of the formula



wherein R_1, R_2 and R_3 are identical or different aliphatic, cycloaliphatic or alkylaromatic hydrocarbon radicals having from 8 to 30 carbon atoms.

3,691,083

CURING AGENT MIXTURES FOR EPOXIDE RESINS

Ulrich Niklaus, Aesch, Basel-Land, and Dieter Baumann, Birsfelden, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Nov. 16, 1970, Ser. No. 90,013

Claims priority, application Switzerland, Nov. 21, 1969, 17,382/69

Int. Cl. C09k *3/00*; H05b *33/00*

U.S. Cl. 252—182 **7 Claims**

Curing agent mixtures for epoxide resins, containing (1) a precondensate of (a) cycloaliphatic dicarboxylic acid anhydride, for example hexahydrophthalic anhydride, (b) a dimeric or trimeric C_{14}–C_{24} fatty acid (for example "Empol 1024") and (c) a polyglycidyl-ether of polyglycidyl-ester (for example butanediol-1,4-diglycidyl-ether or Araldite F), and (2) a C_{12}–C_{18}-alkylsuccinic anhydride or alkenylsuccinic anhydride (for example dodecenylsuccinic anhydride). To manufacture the precondensate (1), 0.2 to 0.7 carboxyl groups of the oligometric fatty acid and 0.1 to 0.4 epoxide groups of the polyglycidyl-ether or polyglycidyl-ester are employed for 1 mol of anhydride. 5–50 parts by weight of alkylsuccinic anhydride or alkenylsuccinic anhydride are used per 100 parts of anhydride precondensate. The new curing agent mixtures are liquid and can be mixed with epoxide resins in any desired ratio; the cured shaped articles show good flexibility and have a very low dielectric loss above the 2nd glass point.

3,691,084

BASE-BORATE REACTOR SAFETY SPRAY SOLUTION FOR RADIOLYTIC HYDROGEN SUPPRESSION

Herman E. Zittel, Kingston; Sebastian B. Lupica, Oak Ridge, and Lamont C. Bate, Clinton, all of Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed April 19, 1971, Ser. No. 135,393
Int. Cl. B01d *47/06*; G21c *15/18*
U.S. Cl. 252—182 2 Claims

As a new composition of matter, water or an aqueous solution of sodium hydroxide containing up to 3,000 ppm boron as the borate is provided, said water or solution having a pH in the range 5.8 to 12.1, said water or solution containing a reagent selected from the group consisting essentially of Na_2MoO_4, Na_2CrO_4, Na_2WO_4, and $NaVO_3$ at a concentration which is effective to suppress hydrogen formation resulting from irradiation of said solution in a nuclear reactor.

3,691,085

METHOD OF CONTROLLING THE LIFETIME OF OXALATE ESTER CHEMILUMINESCENT REACTIONS

Bernard Roberts, Rowayton, Conn., and Michael McKay Rauhut, Norwalk, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 648,932, June 26, 1967, which is a continuation-in-part of Ser. No. 577,615, Sept. 7, 1966, abandoned. This application July 13, 1970, Ser. No. 56,198
Int. Cl. C09k *3/00*
U.S. Cl. 252—188.3 11 Claims

A novel chemiluminescent composition which incorporates at least one of a newly discovered group of materials which extend the lifetime during which an oxalic ester chemiluminescent reaction produces chemiluminescent light. The lifetime extender materials are inorganic and organic acids which have a pKa below about 5.0 in aqueous solution. Also useful are sulfates of lithium and metals from Groups 2*a*, 2*b*, and 3*a* of the Periodic Table, chlorides of Group 2*a* metals, silica, and acidic ion exchange resins.

3,691,086

OIL-WATER SEPARATIONS

Ronald D. Lees, Houston, Tex., and Ronald W. Smith, Wilmington, Del., assignors to Hercules Incorporated, Wilmington, Del.

Filed July 31, 1970, Ser. No. 60,137
Int. Cl. B01d *17/04*
U.S. Cl. 252—329 18 Claims

Disclosed is a process of facilitating the separation of oil from oil-in-water liquid emulsion systems. The system is contacted with a separation aid including either (1) certain polymers, (2) polymers in conjunction with certain salts, or (3) polymers in conjunction with salts and silica sol. The polymers are water soluble cationic vinyl polymers. The salts are water soluble salts of polyvalent metals which salts in water solution give an acid reaction.

3,691,087

METHOD FOR THE PREPARATION OF URANIUM OXIDE SOLS

Forrest R. Hurley, Ellicott City, Md.; Melvin Tecotzky, Palo Alto, Calif., and Milton C. Vanik, Severna Park, Md., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 558,616, June 20, 1966, Pat. No. 3,375,203, which is a continuation-in-part of Ser. No. 290,170, June 24, 1963, abandoned, which is a continuation-in-part of Ser. No. 1,159, Jan. 8, 1960, abandoned. This application Feb. 20, 1968, Ser. No. 706,773. The portion of the term of this patent subsequent to May 20, 1980, has been disclaimed.
Int. Cl. C09k *3/00*
U.S. Cl. 252—301.1 S 4 Claims

A process for preparing sols of urania composed of particles in the 60 to 1900 angstrom size range which comprises electrodialysizing a solution of a tetravalent salt of uranium in a multi-compartment cell wherein the compartments are separated by an ion exchange resin membrane.

3,691,088

PROCESS FOR PREPARING PHOSPHORS

Dean E. Pelton, Towanda, Pa., assignor to Sylvania Electric Products, Inc.

Filed Oct. 30, 1970, Ser. No. 85,797
Int. Cl. C09r *1/12*
U.S. Cl. 252—301.6 S 9 Claims

A dry process for preparing cathodoluminescent sulfide phosphors having a small particle size, that comprises forming a relatively uniform mixture of an oxide of a divalent metal, a source of an activator material, and a source of sulfur, in specific ratios and thereafter heating the uniform mixture under controlled conditions in air.

3,691,089

PROCESS FOR THE PRODUCTION OF COLLOIDAL SILICIC ACID COATED WITH MIXTURE OF METALLIC OXIDES, AND PRODUCT

Karl-Heinz Janzon, Grossauheim; Eugen Meyer Simon, and Heinrich Schwab, both of Frankfurt/Main, all of Germany, assignors to Deutsche Gold-und Silber-Scheidean Stalt, Vormals Roessler, Frankfurt am Main, Germany

Filed Aug. 5, 1970, Ser. No. 61,484
Claims priority, application Germany, Aug. 8, 1969, P 19 40 412.7
Int. Cl. B01j *13/00*; B44d *1/12*
U.S. Cl. 252—313 S 10 Claims

Silicic acid sols are treated with a mixture of trivalent metal salts and bivalent metal salts which react to form metallic oxide coatings on the surface of the sol particles. The sols as a result are rendered more stable, as indicated by the fact that the viscosity of said sols remains constant and the tendency to gel is eliminated. The sols can be dried to give a finely divided product.

3,691,090

ENCAPSULATION METHOD

Masao Kitajima, Saitama; Tsutomu Yamaguchi, Saitama; Asaji Kondo, Saitama, and Noriynki Muroya, Shizuoka, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, and Toyo Jozo Co. Ltd., Shizuoka, all of Japan

Filed Jan. 13, 1970, Ser. No. 2,618
Claims priority, application Japan, Jan. 16, 1969, 44/3042; Jan. 17, 1969, 44/3260
Int. Cl. B01j *13/02*; B44d *1/02*
U.S. Cl. 252—316 28 Claims

A process for the preparation of capsules containing a core material, comprising dispersing the core material in a solution of an organic solvent and an encapsulating material, dispersing the dispersion in an aqueous inorganic salt solution and then removing the organic solvent, is disclosed.

3,691,091

DEFOAMING EMULSION

Gotz Koerner, Essen, Germany, assignor to Th. Goldschmidt AG, Essen, Germany

Filed Feb. 10, 1970, Ser. No. 10,281

Claims priority, application Germany, March 22, 1969, P 19 14 684.0

Int. Cl. B01d *17/00*

U.S. Cl. 252—358 1 Claim

The defoaming activity of an aqueous defoaming emulsion containing an emulsifier, silica in fine particle form and methylpolysiloxanes is increased by incorporating into the emulsion 10 to 60 percent by weight, calculated on the total amount of siloxane in the emulsion, of organosilicon compounds of the general formula:

$$(CH_3)_n\text{—}\underset{\underset{X_m}{|}}{Si}\text{—}O_{\frac{4-(n+m)}{2}}$$

wherein X stands for -OR, R being hydrogen or alkyl of one to four carbon atoms, *n* has a value of 1.8 to 2.0 and *m* has a value from 0.02 to 0.33.

3,691,092

1,1,1,3,3,3-HEXAFLUORO-2-PROPANOL/C1 TO C4 ALKANOL COMPLEXES

Joseph Angelo Floria, Pennsville, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 29, 1970, Ser. No. 85,220

Int. Cl. B01f *1/00*

U.S. Cl. 252—364 5 Claims

1,1,1,3,3,3-Hexafluoro-2-propanol forms maximum boiling point complexes with primary, secondary and tertiary C_1 to C_4 alkanols that have improved selective solubilities for polymethylmethacrylates and other similar polymers.

3,691,093

EFFICIENCY OF NICKEL-ALUMINUM CATALYSTS BY WATER WASHING

Herman J. Frank, Seabrook, and Irving Moch, Jr., Harris County, both of Tex., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 12, 1969, Ser. No. 798,766

Int. Cl. B01j *11/02*, *11/30*

U.S. Cl. 252—420 5 Claims

The method of increasing the efficiency for the conversion of 2-butyne-1,4-diol to saturated products of a granular, foraminous catalyst which has been activated by removing about 5–30 percent of the aluminum from a nickel-aluminum alloy containing about 35–60 percent by weight of nickel and about 40–65 percent by weight of aluminum after such efficiency has been reduced through extended use as a fixed-bed catalyst in the continuous hydrogenation of an aqueous mixture containing about 20–70 percent by weight of 2-butyne-1,4,-diol and about 30–80 percent by weight of water at a temperature of about 60°–150°C. under a hydrogen pressure of 2,500–5,500 psi. and a superficial gas velocity of at least about 0.5 foot per minute which comprises washing the catalyst with a wash medium consisting essentially of water in combination with a pressure which is less than the reaction pressure, the volume of said wash medium being at least about 50 percent of the volume of the catalyst bed.

3,691,094

Patent Not Issued For This Number

3,691,095

CATALYST FOR OLEFIN REACTIONS

Wolfram R. Kroll, Gerald Doyle, both of Somerville, N.J., and Helmut W. Ruhle, Edison, N.J., assignors to Esso Research and Engineering Company

Filed Sept. 16, 1970, Ser. No. 72,837

Int. Cl. C07c *3/62*

U.S. Cl. 252—428 8 Claims

A process for preparing a catalyst which comprises contacting a polynuclear transition metal carbonyl complex having the general formula

$$A_n(MM'(CO)_qL_m)^{-a}$$

wherein A is a cation selected from the group consisting of alkali metals and cations having the general formula D_4Q wherein D is selected from a group consisting of C_1–C_{20} hydrocarbyl radicals and halogenated derivatives thereof and Q is selected from the group consisting of nitrogen, phosphorus and arsenic; M is a Group VI-B metal; M′ is a metal selected from the group consisting of Group VI-B and Group VII transition metals; L is a unidentate or bidentate ligand selected from the group consisting of CO, NH_3, hydrazine, phenylhydrazine, cyclohexylamine, n-butylamine, dimethylamine, aniline, diethylamine, pyridine, 2,6-dimethylpyridine, triphenylarsine, tributylstibine, triphenylstibine, dimethylsulfoxide, dimethylcyanamide, N-cyanopiperidine, triphenylphosphine imine, ethylenediamine, tetramethylethylenediamine 2,2′-dipyridyl, 1,10-phenanthroline, 2,7-dimethyl-1,8-naphthyridine, piperidine, piperazine, acetonitrile, propionitrile, acrylonitrile, triphenylphosphine, triphenylphosphine oxide, triphenyl phosphite, tricyclohexylphosphine triphenylarsine, tri(p-tolyl)arsine, tetramethyldiphosphine, 1,2-bis(diphenylphosphino) ethane, 1,2-bis(diphenylarsino)ethane, O-phenylene bis(dimethylarsine), diethylenetriamine, bis(2-methoxyethyl)ether, 2,5,8-trithianonane, tris(diphenylphosphinomethyl)ethane, and tetrakis(diphenylphosphinomethyl)methane; q is an integer of from 0 to 14; *m* is an integer varying from 0 to 2, and wherein L must be CO when *q* is equal to 0; *n* is an integer of from 1 to 2 and equal to the valence of the carbonyl anion; with an ionic compound of the type RX wherein X is a halide and R is selected from the group consisting of compounds having the general formula D_4Q wherein D is selected from the group consisting of C_1–C_{20} hydrocarbyl radicals and halogenated derivatives thereof and Q is nitrogen, phosphorus or arsenic, and an organometallic activator, said organometallic activator comprising organoaluminum halides selected from the group consisting of compounds having the general formulas $R'AL_2$ and $R'_3AL_2Y_3$ wherein R′ is selected from the group consisting of hydrogen and C_1–C_{20} hydrocarbyl radicals and C_1–C_{20} oxyhydrocarbyls and wherein at least one R′ is a hydrocarbyl radical, and Y is a halide, said contacting taking place at a temperature from −35 to 100°C and a pressure of from about 0.01 atmospheres to 500 atmospheres, the atomic ratio of the metal of the organometallic activator to the Group VI-B metal of the metallic complex varying from about 20:1 to 1:1 and the molar ratio of the Group VI-B metal to said ionic compound varying from 10:1 and 0.1:1, whereby a catalyst is formed. Catalysts prepared by the above process are especially effective as olefin disproportionation catalysts.

3,691,096

PREPARATION OF A CARRIER-SUPPORTED CATALYST

Kurt Sennewald, Hurth-Hermulheim; Heinz Erpenbach, Surth near Cologne; Wilhelm Vogt, Efferen near Cologne; Winfried Lork, Erftstadt Friesheim, and Peter Prinz, Hurth-Burbach, all of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack near Cologne, Germany

Filed Aug. 21, 1970, Ser. No. 66,120

Claims priority, application Germany, Sept. 22, 1969, P 19 47 830.9

Int. Cl. B01j *11/82*

U.S. Cl. 252—437 12 Claims

Preparation of a carrier-supported catalyst consisting of oxides of iron, bismuth, molybdenum and optionally silver and

phosphorus in the atomic ratio of $Ag_{0-1.3}Fe_{0.1-12}Bi_{0.1-12}P_{0-5}M_{12}O_{30-110}$, and of silicon carbide, aluminum oxide or silicon dioxide as the carrier. The catalyst is prepared in two steps. In the first step a porous carrier is impregnated at least once with an aqueous solution of a molybdenum compound and the water is evaporated; in the second step, the said carrier is impregnated at least once, at temperatures of between 20° and 100°C, with an aqueous nitric acid solution of iron, bismuth and optionally silver nitrates and optionally phosphoric acid; after the last impregnation, the carrier so treated is allowed to remain in contact with the said aqueous nitric acid solution for a period of between 5 and 24 hours, water and nitric acid are evaporated with continuous agitation of the carrier, and the carrier with the said salts adhered thereto is dried at temperatures of between 100° and 300°C, and annealed at temperatures of between 450° and 550°C.

3,691,097

UNIFORM COMPOSITE STRUCTURES OF CATALYST AND FIBROUS REFRACTORY

Alvin B. Stiles, 1301 Grayson Rd., Welshire, Wilmington, Del., and Joseph Angelo Floria, Pennsville, N.J., assignors to E. I. DuPont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 803,560, March 3, 1969, abandoned. This application June 15, 1970, Ser. No. 46,550

Int. Cl. B01j *11/06*

U.S. Cl. 252—440 **4 Claims**

This invention relates to paper-like catalytic structures which are comprised of a catalytic material uniformly distributed throughout a porous fibrous support material. The paper-like catalytic structure can also include a cement or a filler material if desired.

This invention also relates to the process of preparing said paper-like catalytic structures.

3,691,098

PROCESS FOR MANUFACTURING OXYCHLORINATION CATALYSTS

Benedetto Calcagno, Milan; Marcello Ghirga, Bresso, and Natale Bertolini, Milan, all of Italy, assignors to Societa Italianca Resine S.P.A., Milan, Italy

Filed Oct. 29, 1970, Ser. No. 85,309

Claims priority, application Italy, Nov. 14, 1969, 24409 A/69

Int. Cl. B01j *11/78*

U.S. Cl. 252—441 **12 Claims**

Oxychlorination catalysts for conversion of hydrocarbons or partially chlorinated hydrocarbons to chlorinated derivatives are made by fluidizing a bed of decomposable copper salt and an inert support, optionally in the presence of an alkali metal chloride, by means of a flow of hydrochloric acid gas and a molecular-oxygen containing gas.

3,691,099

TREATMENT OF ALUMINOSILICATE

Dean Arthur Young, 4721 Palm Ave., Yorba Linda, Calif.

Continuation-in-part of Ser. No. 797,678, Feb. 7, 1969, abandoned, which is a continuation-in-part of Ser. No. 697,587, Jan. 15, 1968, Pat. No. 3,460,934, which is a continuation-in-part of Ser. No. 457,485, May 20, 1965, Pat. No. 3,383,169. This application Feb. 27, 1970, Ser. No. 15,219

Int. Cl. B01j *11/32*, *11/40*

U.S. Cl. 252—450 **25 Claims**

The properties of aluminum-containing refractory oxides in which at least some of the aluminum atoms are tetra-coordinated are improved and/or retained upon contacting with aqueous acidic media in the presence of slats having cations capable of satisfying the negative charge on the tetra-coordinated aluminum atoms. Further advantage with regard to zeolites is realized when the salt anion is capable of combining, e.g., reacting, complexing etc., with aluminum.

3,691,100

TUNGSTEN OXIDE PROMOTED AND SUPPORTED NICKEL CATALYST

Leon W. Wright, Wilmington, Del., assignor to Atlas Chemical Industries, Inc., Wilmington, Del.

Filed Feb. 5, 1970, Ser. No. 9,059

Int. Cl. B01j *11/22*; B01j *11/32*

U.S. Cl. 252—458 **7 Claims**

Disclosed is a process for the production of polyhydric alcohols from carbohydrates. Also disclosed is a catalyst comprising finely divided metallic nickel and finely divided tungsten oxide supported on an inert carrier wherein the metallic nickel is from 15 to 45 percent by weight, based on total weight of catalyst, and wherein the tungsten oxide is from 0.5 to 16 percent by weight, based on the total weight of catalyst.

3,691,101

HIGH ACTIVITY ZEOLITE CATALYSTS AND THEIR PREPARATION

Joseph K. Mertzweiller, Baton Rouge, La., and Neville L. Cull, Baker, La., assignors to Esso Research and Engineering Company

Filed June 5, 1970, Ser. No. 43,984

Int. Cl. B01j *11/40*; C01b *33/28*

U.S. Cl. 252—455 Z **11 Claims**

Hydrocarbon feeds are converted into hydrocarbon products by contact at suitable conversion conditions with new and novel, highly active catalyst composites formed from crystalline alumino-silicate zeolites within which transition metal cations are deposited, i.e., exchanged or impregnated, and then activated, in novel manner. The catalysts are formed by ion-exchanging, or impregnating, an alkali, alkaline earth or other form, e.g., a hydrogen form, of the crystalline aluminosilicate zeolite base, natural or synthetic, with salt solutions of Group IB, IVB, VB, VIB, VIIB and VIII metals; heat-treating, or pretreating, to form chemical complexes at the ion-exchange sites, to drive off moisture and absorbed oxygen, and then activating and further modifying the complex by contacting the so-formed composite with covalent or liquid soluble forms, and preferably monomeric forms, of organometallic compounds capable of entering into the pores of the zeolite, and wherein the metal constituent is selected from Groups I, II and III, and preferably Groups IA, IIA and IIIA, of the Periodic Chart of the Elements. Preferably, the so-activated composite is then treated in the presence of hydrogen at elevated temperature to fix the catalyst in its most active and stable form. Suitably, a mixed metal modification of the catalyst can be formed by use of an additional metal component, or components, which can be contacted and composited with the catalyst before or after, but preferably before, the activation and fixation steps.

3,691,102

GROUP VIII METAL-TIN CATALYST AND METHOD OF MAKING SAME

Harold E. Swift, West Deer Township, Allegheny County, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 689,233, Nov. 22, 1967, Pat. No. 3,580,970, which is a continuation-in-part of Ser. No. 506,479, Nov. 5, 1965, abandoned. This application May 11, 1970, Ser. No. 36,178

Int. Cl. B01j *11/08*, *11/22*, *11/32*

U.S. Cl. 252—469 **13 Claims**

A Group VIII metal-tin catalyst is described in which the molar ratio of Group VIII metal to tin is about 1.7 to 15. The catalyst is prepared by heating reducible compounds of a Group VIII metal and tin in oxygen and then reducing the resulting product with hydrogen. A metallic nickel-tin composition is an example of this catalyst.

3,691,103

PROCESS FOR THE PREPARATION OF A NON-PYROPHORIC NICKEL SKELETON CATALYST

Zoltan Csuros; Jozsef Petro; Antal Tungler; Tibor Mathe, and Sandor Bekassy, all of Budapest, Hungary, assignors to Magyar Tudomanyos Akademia

Filed March 26, 1970, Ser. No. 23,068

Claims priority, application Hungary, March 25, 1969, MA 1965

Int. Cl. B01j *11/22*

U.S. Cl. 252—473 3 Claims

A process for the preparation of non-pyrophoric nickel skeleton catalysts, in which 30 to 80 percent by weight of metallic zinc, 60 to 20 percent by weight of metallic nickel and 0 to 40 percent by weight of one or more further metals soluble in alkaline solutions are heat-treated at temperatures in the range of 880° to 1,120° C for at least 3 minutes, preferably for 10 to 30 minutes, with simultaneous protection of the surface of the melt against oxidation, the melt thus obtained is cooled at a rate not exceeding 120°/minute in the average, the alloy thus obtained is powdered or granulated, and the powdered or granulated alloy is treated with an alkali hydroxide solution of 10 – 50 percent by weight at temperatures not exceeding the boiling point of the alkaline solution.

3,691,104

PROCESS FOR PREPARING PHOTOCONDUCTIVE POWDERS

Hiroshi Hanada, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 13, 1970, Ser. No. 37,040

Claims priority, application Japan, May 15, 1969, 44/37799

Int. Cl. H01c *7/06*

U.S. Cl. 252—501 2 Claims

A ternary compound of A_4BC_6 type where A is Cd or Zn, B is Si or Ge, and C is S, Se or Te is calcinated by using a halogen compound as flux, and if desired, in addition, an activator. The ternary compound thus calcinated has high spectral sensitivity to a shorter wave length range of visible light and is useful for electrophotographic photosensitive member.

3,691,105

COMPOSITIONS FOR ELECTROSENSITIVE RECORDING MATERIAL

Kiyoshi Juna; Noboru Shinada, and Masuo Tuchiya, all of Research Laboratory, Kansai Paint Co., Ltd., 1200, Yawata, Kanagawa-ken, Japan

Filed Oct. 21, 1970, Ser. No. 82,855

Claims priority, application Japan, May 12, 1970, 45/39691; June 29, 1970, 45/55947; Aug. 28, 1970, 45/74947

Int. Cl. H01b *1/08*

U.S. Cl. 252—519 7 Claims

Compositions for electrosensitive recording material used as recording paper for facsimiles etc., comprise zinc oxide doped with trivalent or tetravalent metal elements and a binder.

3,691,106

NOVEL DETERGENT COMPOSITIONS

Nicholas Z. Erdy, New York, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

Filed Aug. 28, 1970, Ser. No. 68,015

Int. Cl. C11d *3/30*

U.S. Cl. 252—544 16 Claims

There are disclosed novel detergent compositions comprising a mixture of one or more surfactants with a unique builder for said compositions which comprises a crosslinked, water-insoluble copolymer of at least one C_2–C_3 olefin and at least one polycarboxyl vinyl monomer; said crosslinked, water-insoluble copolymer being a water-swellable, gel-forming material.

3,691,107

NOVEL DETERGENT COMPOSITIONS

Nicholas Z. Erdy, New York, N.Y., and Arthur J. Yu, Stamford, Conn., assignors to Stauffer Chemical Company, New York, N.Y.

Filed Aug. 28, 1970, Ser. No. 68,016

Int. Cl. C11d *3/30*

U.S. Cl. 252—544 16 Claims

There are disclosed novel detergent compositions comprising a mixture of one or more surfactants with a unique builder for said compositions which comprises a cross-linked, water-insoluble copolymer of at least one C_4–C_{10} olefin and at least one polycarboxyl vinyl monomer; said crosslinked, water-insoluble copolymer being a water-swellable, gel-forming material.

3,691,108

OLEFIN SULFONATE DETERGENT COMPOSITION

Eiichi Ichiki; Kazuo Iida; Yasuhiko Inoue, and Keizo Uyeo, all of Niihama, Japan, assignors to Sumitomo Chemical Co., Ltd., Higashi-ku, Osaka, Japan

Filed Aug. 28, 1970, Ser. No. 68,042

Claims priority, application Japan, Aug. 29, 1969, 44/68853

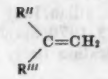
Int. Cl. C11d *3/065, 1/12*

U.S. Cl. 252—555 5 Claims

An olefin sulfonate detergent composition containing, as active ingredients, a mixture consisting essentially of (a) 25 to 75 parts by weight of a sulfonate of a straight chain a-olefin represented by the general formula

$$R^I - CH \quad CH_2$$

wherein R^I is an alkyl radical of 12 to 20 carbon atoms, and the average number of bonded SO_3 radicals of said sulfonate is 1.05 to 1.7, and (b) 75 to 25 parts by weight of a sulfonate of a vinylidene olefin represented by the general formula



wherein R^{II} and R^{III} each is an alkyl radical of one to 19 carbon atoms and the sum of the carbon atoms of R^{II} and R^{III} is 12 to 22, and the average number of bonded SO_3 radicals of said sulfonate is 1.05 to 1.7.

3,691,109

PROCESS FOR REGENERATING RESINS OF DEIONIZATION SYSTEM

Arthur L. Larsen, Denver, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed May 25, 1970, Ser. No. 40,183

Int. Cl. B01d *15/06;* C02b *1/76*

U.S. Cl. 260—2.1 R 4 Claims

A weak acid resin which is exhausted by contact with bases is regenerated by contact with carbonic acid formed by introducing carbon dioxide into water under a pressure of from 100 to 300 psi. The carbonic acid is capable of regenerating the sodium form of the weak acid resin. The sodium bicarbonate from the regeneration of the weak acid resin is then degassed to eliminate the carbonic acid or CO_2 and the remaining sodium bicarbonate is used to regenerate a weak base anion resin. The ion exchange beds are then run in reverse, that is, the anions are exchanged before the cations.

3,691,110

ANTISTATIC TREATING AGENT FROM POLYEPOXIDE-POLYAMINE REACTION

Toshio Ohfuka; Yasushi Ichikawa, and Takeshi Ueda, all of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed June 2, 1970, Ser. No. 42,871
Claims priority, application Japan, June 11, 1969, 44/45403
Int. Cl. C08g *30/14, 45/00*
U.S. Cl. 260—2 EP 18 Claims

Durable antistatic effects can be imparted to fibers by treating the fibers with a novel water-soluble polyamine either alone on in admixture with a polyepoxide compound. The novel water-soluble polyamine is obtained by reacting a polyamine with a polyol derivative having at least two glycidyl ether groups in one molecule and treating the reaction product, before it becomes water-insoluble, with a sulfite and/or a bisulfite.

3,691,111

EPIHALOHYDRIN POLYMERS

Tsuneo Takaoka, Chigasaki-shi; Tetsuya Ohta, Fujisawa-shi, and Masaru Itoh, Chigasaki-shi, all of Japan, assignors to Nippon Oil Seal Industry Co. Ltd., Minato-ky, Tokyo-to, Japan

Filed Nov. 28, 1969, Ser. No. 880,989
Claims priority, application Japan, Dec. 19, 1968, 43/92683
Int. Cl. C08g *23/14*
U.S. Cl. 260—2 A 5 Claims

Production of epihalohydrin polymers using a catalyst system including an organoaluminum compound and sulfur wherein the sulfur/aluminum atomic ratio is from about 0.05 to 0.8.

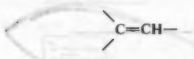
3,691,112

PROCESS FOR THE PRODUCTION OF POLYAMIDE FOAMS AND ELASTOMERS FROM AMINO-CROTONIC ACID ESTERS

Gerhard Grogler, Leverkusen, and Gunter Oertel, Cologne, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed July 10, 1970, Ser. No. 53,994
Claims priority, application Germany, July 12, 1969, P 19 35 484.8
Int. Cl. C08g *22/44, 22/00, 20/00*
U.S. Cl. 260—2.5 AM 16 Claims

Novel polyamides are obtained by a process which comprises the polyaddition of aliphatic or aromatic polyisocyanates with N-substituted-amino-crotonic acid esters. The addition of the NCO group takes place on the active hydrogen atom of the



group of the amino-crotonic acid ester.

3,691,113

EXPANDED CROSS-LINKED POLYMERS OF EPIHALOHYDRIN

William D. Willis, Limestone Acres, Del., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 550,622, May 17, 1966, which is a continuation-in-part of Ser. No. 341,728, Jan. 31, 1964, Pat. No. 3,287,287, which is a continuation-in-part of Ser. No. 261,189, Feb. 26, 1963, abandoned. This application Aug. 23, 1967, Ser. No. 662,577
Int. Cl. C08j *1/18*
U.S. Cl. 260—2.5 R 8 Claims

A foamed product comprising a cross-linked epihalohydrin polymer of substantially uniform closed-cell structure.

3,691,114

Patent Not Issued For This Number

3,691,115

Patent Not Issued For This Number

3,691,116

SYNTHETIC RESIN COMPOUNDS OF THE PHTHALOCYANINE SERIES

Robert Bruce McKay, Kilmarnock, Ayrshire, Scotland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Aug. 12, 1970, Ser. No. 63,345
Claims priority, application Great Britain, Aug. 13, 1969, 40455/69
Int. Cl. C08g *51/14*; C08h *17/14*
U.S. Cl. 260—18 N 13 Claims

New synthetic resin condensation products are prepared by condensing a chlormethylated copper phthalocyanine and a polyamide. The new polymers are used to improve the flocculation resistance of phthalocyanine pigments.

3,691,117

POLYURETHANE COMPOSITIONS OF MATTER AND METHODS OF MANUFACTURE

Alfred E. Messerly, 7955 Haskell Ave., Unit 15, Van Nuys, Calif.

Continuation-in-part of Ser. No. 635,659, May 3, 1967, abandoned. This application Aug. 10, 1970, Ser. No. 62,669
Int. Cl. C08g *22/08, 22/40*; C09d *3/72*
U.S. Cl. 260—18 TN 7 Claims

Improved polyurethane compositions of matter are prepared by reacting a prepolymer and a polyol in the presence of suitable catalysts to produce materials which cure rapidly and through chemical bonding, are adapted to provide covering protection for surfaces made of various substances and prevent electrolysis of conductive substances. The steps in the preparation of these improved polyurethane compositions generally provide for the reaction of higher molecular weight diols with isocyanates at an elevated temperature to insure completion of reaction and then reducing the temperature to inhibit premature formation of cross linkages in the preparation of prepolymers. The polyols used in the reaction with such prepolymers are novel in that such polyols contain chain extenders, polyfunctional polyalkylene polyols, tertiary alkanolamines, and relatively high molecular weight polyalkylene ethers.

3,691,118

LEATHER PRINTING COMPOSITION

Murray Fishman, Wantagh, N.Y., assignor to Nicholas R. Loscalzo, Suffolk County and Frank Coloprisco, Wantagh, N.Y., part interest to each

Filed Jan. 12, 1968, Ser. No. 697,328
Int. Cl. C08g *5/20*
U.S. Cl. 260—19 UA 4 Claims

Compositions for printing on leather are obtained from compositions containing an oleoresinous varnish, a penetrating agent and a friction-reducing agent.

3,691,119

OXYSILYLENE FLUOROCHEMICAL POLYMERS AND PROCESS FOR PREPARING SAME

Albert Charles Tanquary, Birmingham, Ala., assignor to Southern Research Institute, Birmingham, Ala.

Filed Aug. 18, 1970, Ser. No. 64,811
Int. Cl. C08f *11/04*
U.S. Cl. 260—2 S 12 Claims

An oxysilylene fluorochemical polymer is prepared by reacting (a) at least one fluorochemical diol containing two pairs of trifluoromethyl groups, each pair being attached

directly to a carbon atom having a hydroxy group attached thereto, and (b) at least one silylamino compound having two amino groups each attached directly to a silicon atom; or, reacting a dialkali metal salt of the diol with a corresponding dichloride of the silylamino compound. The preferred fluorochemical diols include the isobutylene and propylene adducts of hexafluoroacetone, and the preferred silylamino compounds include 1,4-bis(dimethylaminodimethylsilyl)benzene and bis(dimethylamino) dimethylsilane.

3,691,120

HOT-MELT ADHESIVE

Rinnosuke Susuki, Tokyo; Hiroshi Hoshi, Narashino; Jiro Saito, and Minoru Okada, both of Tokyo, all of Japan, assignors to Lion Fat & Oil Co., Ltd., Tokyo, Japan

Filed Nov. 20, 1970, Ser. No. 91,534

Claims priority, application Japan, Nov. 25, 1969, 44/93957

Int. Cl. C08d *9/12*; C08c *11/70*; C08f *45/04*

U.S. Cl. 260—27 EV **7 Claims**

A hot-melt adhesive having a superior adhesiveness at high temperature, comprising 100 parts by weight of a thermoplastic substance composed essentially of ethylene-vinyl acetate copolymer and 10–200 parts by weight of an inorganic filler.

3,691,121

RESOLE VARNISHES PREPARED FROM SUBSTITUTED PHENOLS

George J. Anderson, Wilbraham, Mass., and Ronald H. Dahms, Springfield, Mass., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 588,310, Oct. 21, 1966, abandoned, and a continuation-in-part of Ser. No. 676,043, Oct. 18, 1967, abandoned, and a continuation-in-part of Ser. No. 738,812, June 21, 1968, abandoned. This application March 9, 1971, Ser. No. 122,525

Int. Cl. C09g *5/08*; C08g *37/10*, *51/34*

U.S. Cl. 260—29.3 **9 Claims**

The invention relates to resole resin varnishes in largely non-aqueous organic solvents, especially lower alkanols. The resole resins are produced by reacting, under basic aqueous conditions, formaldehyde with a phenol mixture which has been prepared by partial alkylation of phenol with a specific mixture of carbocyclic compounds containing between eight and 13 carbon atoms. The resulting resole resin is then dissolved in organic solvent. The resulting solutions are useful as varnishes in the manufacture of impregnated sheets, laminates, and other reinforced plastics.

3,691,122

Patent Not Issued For This Number

3,691,123

POLYMER DISPERSIONS

Michael Raymond Clarke, Montreal, Canada; Desmond Wilfrid John Osmond, Windsor, and Frederick Andrew Waite, Farnham Common, both of England, assignors to Imperial Chemical Industries Limited, Imperial Chemical House, Millbank, London, England and Balm Paints Limited, Melbourne, Australia

Continuation-in-part of Ser. No. 525,315, Feb. 7, 1966, abandoned, and a continuation-in-part of Ser. No. 653,631, July 17, 1967, abandoned. This application Dec. 19, 1969, Ser. No. 886,777

Claims priority, application Great Britain, Feb. 12, 1965, 6,289/65; July 20, 1966, 32,626/66

Int. Cl. C08f *45/28*

U.S. Cl. 260—29.1 R **12 Claims**

Stable dispersions of particles of synthetic polymer in inert organic liquid in which the polymer is insoluble, the dispersion containing a stabilizer which is soluble in the organic liquid and which provides around the polymer particles a stabilizing steric barrier at least 12 A thick, the stabilizer being bonded to the polymer particles by strong specific interaction between polar groups in the stabilizer and complementary polar groups in the disperse polymer.

3,691,124

STABILIZED POLYMER IN OIL LATEXES AND SUSPENSIONS

Benny G. Barron, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sept. 10, 1970, Ser. No. 71,198

Int. Cl. C08f *1/13*

U.S. Cl. 260—29.6 WB **5 Claims**

Polymer in oil emulsions resulting from the water-in-oil emulsion polymerization of water soluble monomers have improved stability when the copolymers of a dialkylaminoalkyl methacrylate or methacrylamide with an alkylacrylate or methacrylate is used as the emulsions stabilizer.

3,691,125

STABLE AQUEOUS EMULSIONS

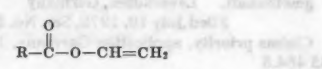
Eugene S. Barabas, Watchung, and Marvin M. Fein, Westfield, both of N.J., assignors to GAF Corporation, New York, N.Y.

Filed May 4, 1970, Ser. No. 34,570

Int. Cl. C08f *1/13*, *19/00*

U.S. Cl. 260—29.6 WB **7 Claims**

1. An emulsion copolymerization process for producing an aqueous emulsion comprising copolymerization of approximately by weight 1–99 parts of an N-vinyl lactam and 99 to 1 parts of a vinyl ester having the formula



wherein R is C_{1-18} alkyl, in an aqueous medium having a total solids content by weight of about 40 to 60% and containing as seeding agent 5–20% polymeric N-vinyl lactam based on the amount of said N-vinyl lactam.

3,691,126

AQUEOUS DISPERSIONS OF AZIRIDINYL ACRYLATE OR METHACRYLATE ACRYLIC GRAFT COPOLYMERS

Aloysius N. Walus, Flint, Mich., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 22, 1970, Ser. No. 100,796

Int. Cl. C08f *45/24*; C09d *5/02*

U.S. Cl. 260—29.6 RW **10 Claims**

The aqueous polymer dispersion is utilized as a coating composition and consists essentially of a graft copolymer dispersed in water. The backbone of the graft copolymer is insoluble in water and is of polymerized units of methyl methacrylate, butyl methacrylate, acrylonitrile and mixtures of these constituents and has grafted to the backbone through an aziridinyl acrylate or methacrylate coupling unit a side chain that is soluble in water and thereby disperses the polymer in the aqueous carrier. The composition is particularly useful as an exterior finish for automobiles and trucks.

3,691,127

FIRE RETARDANT VINYL CHLORIDE COPOLYMER LATICES

Paul Kraft, Spring Valley, and Robert H. Brunner, Yonkers, both of N.Y., assignors to Stauffer Chemical Company, New York, N.Y.

Filed Sept. 10, 1970, Ser. No. 71,231
Int. Cl. C08f *29/18*, *45/24*; C09d *3/74*
U.S. Cl. 260—29.6 T 10 Claims

Aqueous emulsions or latices of fire retardant copolymers of: (1) vinyl chloride; (2) an alkyl acrylate or methacrylate and/or a vinylidene halide; and (3) bis(beta-chloroethyl) vinyl phosphonate and a method for their preparation are disclosed. These copolymer latices are described as being useful in a variety of applications including as coatings, adhesives and paint bases and also as additives for enhancing the fire retardancy of conventional latex polymer systems.

3,691,128

METHOD OF MAKING POWDERED SILICONE RUBBER

Bird J. Vincent, 2775 Smith Crossing Road, Freeland, Mich.

Division of Ser. No. 39,916, May 22, 1970. This application Jan. 27, 1972, Ser. No. 221,409
Int. Cl. C08g *51/04*
U.S. Cl. 260—34.2 2 Claims

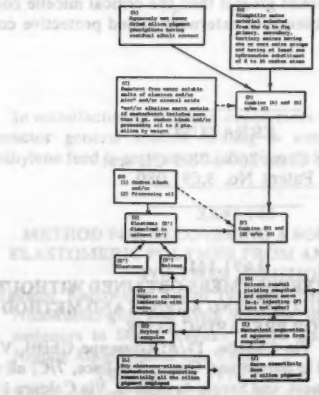
A method of making powdered silicone rubber comprising the formation of a solvent dispersion by dispersing in a volatile solvent a silicone rubber stock together with any desired additives and a silica filler for the stock in an amount equal to at least 30 parts by weight per 100 parts stock and then spray drying the solvent dispersion.

3,691,129

ELASTOMER-SILICA PIGMENT MASTERBATCHES AND PRODUCTION PROCESSES RELATING THERETO

Oliver W. Burke, Jr., 1510 S.W., 13th Court, PomPano Beach, Fla.

Continuation-in-part of Ser. No. 798,215, Sept. 16, 1968, which is a division of Ser. No. 611,250, Jan. 24, 1967, which is a continuation-in-part of Ser. Nos. 458,420, May 24, 1965, and Ser. No. 458,379, May 24, 1965, and Ser. No. 479,806, Aug. 16, 1965. This application July 16, 1970, Ser. No. 55,455
Int. Cl. C08c *11/10*; C08k *1/08*
U.S. Cl. 260—33.6 AO 6 Claims



Curbing of silica pigment losses and the promotion of uniformity of product in the preparation of an elastomer-silica pigment masterbatch are effected (a) by combining (1) an aqueous slurry of hydrated silica pigment precipitate which has a bound alkali content, which has been prepared by precipitation from an aqueous alkali metal silicate solution, and which has been continuously maintained in an aqueous phase without having been dried after its precipitation, with (2) a quantity of oleophilic amine material, (3) combining the resulting treated silica pigment slurry with a solvent dispersion of the elastomer, with or without (4) carbon black and/or processing oil and (5) selected reactant, and (b) removing the solvent and aqueous phase and recovering the resulting combination as a masterbatch essentially without loss of silica pigment.

3,691,130

METHOD OF PRODUCING METAL-POLYMER COMPOSITIONS

Dmitry Danilovich Logvinenko, ulitsa Kalinina, 5, kv. 5, Poltava, U.S.S.R.

Filed Aug. 6, 1970, Ser. No. 61,864
Int. Cl. C08f *45/04*; C08g *51/04*
U.S. Cl. 260—41 B 15 Claims

The present invention relates to method of producing metal-polymer compositions.

The method of the invention is characterized in that a polymer medium which contains a metal component in the form of ferromagnetic particles or a mixture thereof with non-ferromagnetic metal particles is affected by a travelling rotating electromagnetic field.

From the metal-polymer compositions thus produced various articles can be manufactured, featuring high mechanical characteristics.

3,691,131

STABILIZED POLYAMIDE COMPOSITIONS

Peter Kelmchuk, Yorktown Heights, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 1, 1971, Ser. No. 111,672
Int. Cl. C08g *51/56*, *51/60*, *51/62*
U.S. Cl. 260—45.75 C 16 Claims

Heat stabilized synthetic polyamide compositions are prepared by incorporating therein a mixture of a phenolic antioxidant and metal hypophosphite, a copper compound and metal halide. A typical embodiment includes polyamides which are stabilized with 1,2-bis[3,5-di-t-butyl-4-hydroxyphenyl)-propionamido]ethane and sodium hypophosphite, copper acetate and potassium iodide.

3,691,132

STABILIZER SYSTEM

Delos E. Brown; Norman P. Neureiter; Henry G. Schutze, and Herschel C. Williams, all of Baytown, Tex., assignors to Esso Research and Engineering Company, Elizabeth, N.J.

Continuation of Ser. No. 248,876, Jan. 2, 1963, abandoned. This application Nov. 16, 1966, Ser. No. 596,720
Int. Cl. C08f *45/58*
U.S. Cl. 260—45.85 6 Claims

Polyolefins are stabilized with polyphosphites, polyphosphates, polyphosphonates, polyborates, polycarbonates, and polysilianes which are condensation products of a 4,4'-bisphenol with a condensing or linking agent which may be either ester-type, such as the esters of triaryl or mixed arylalkyl compounds, or the acid halide type having molecular weights between about 600 to 8,000 or higher.

3,691,133

POLYEPOXIDE COMPOSITIONS CONTAINING DICYANDIAMIDE AND AN IODONIUM, PHOSPHONIUM, OR SULFONIUM SALT

James J. Sura, Warren Township, N.J., assignor to Union Carbon Corporation

Filed March 25, 1971, Ser. No. 128,133
Int. Cl. C08g *30/14*
U.S. Cl. 260—47 EC 13 Claims

The disclosure of this application is directed to polyepoxide compositions, containing dicyandiamide and an iodonium,

phosphonium or sulfonium salt, which are relatively stable at room temperature and can be cured at moderately elevated temperatures in a relatively short period of time to thermoset products characterized by excellent thermal stability, and when used in adhesive applications to bond together materials such as wood, plastic and metal, by excellent bonding strength.

3,691,134

POLYURETHANES PREPARED FROM CYCLO-ALKYL DIISOCYANATES

Julian Feldman, and Robert J. Shaw, both of Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Continuation of Ser. No. 694,114, Dec. 28, 1967, Pat. No. 3,625,986. This application April 27, 1970, Ser. No. 43,253

Int. Cl. C08g *22/18*

U.S. Cl. 260—77.5 AT **6 Claims**

Polyurethanes are prepared from alkyl diisocyanates such as 1-(isocyanatomethyl)-1-(3-isocyanatopropyl)-cyclohexane; 1-(isocyanatomethyl)-1-(3-isocyanatopropyl)-4-ethyl-5-n-propyl-cyclohexane and bicyclo[2.2.1]-2-isocyanatomethyl-2-(3-isocyanatopropyl) heptane and glycols.

3,691,135

RAPID DRYING MOISTURE CURED COATINGS

Heinz Schulze, 6408 Wilbur Drive, Austin, Tex., and Michael Cuscurida, 301 E. 34 St., Austin, Tex.

Filed Sept. 28, 1970, Ser. No. 76,329

Int. Cl. C08g *22/16*

U.S. Cl. 260—77.5 AP **10 Claims**

Fast drying (curing) polyurethane coatings with excellent physical properties may be made from an isocyanate, a polyhydric alcohol and a polyol which is a condensation product of glyoxal and a polyhydric alcohol which may also contain monofunctional alcohols and residues of vinyl carboxylic acids. Such coatings cure both by reaction with air and moisture. Polyurethane coatings are useful anywhere a tough covering is required. For example, the coatings are useful in flooring, roofing, and wire covering.

3,691,136

USE OF PHOSPHORUS COMPOUNDS AS STRIPPING AGENTS FOR POLYAMIDE-IMIDE FILMS

Carl Serres, Jr., Naperville, and Benjamin A. Bolton, both of Winfield, Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed March 29, 1971, Ser. No. 129,110

Int. Cl. C08g *20/32, 51/34, 51/44*

U.S. Cl. 260—78 TF **12 Claims**

Polyamide-imide compositions useful for film preparation are disclosed. These compositions comprise the polyamide-imide polymer, a solvent system for said polymer, and one of the following stripping agents: phosphoric acid, phosphites, esters of phosphoric acid and strong organic acids.

3,691,137

Patent Not Issued For This Number

3,691,138

PROCESS FOR THE POLYMERIZATION OF α,α-DIALKYL-β-PROPIOLACTONES

Norbert Vollkommer, Kenntemich-Platz 14, 521 Troisdorf; Roshdy Ismail, Schulstrasse, 5201 Neunkirchen, and Moustafa El-Chahawi, Alfred Delp-strasse 6, 521 Troisdorf, all of Germany

Filed July 2, 1970, Ser. No. 60,219

Claims priority, application Germany, July 3, 1969, P 19 33 730.5; Dec. 23, 1969, P 19 64 360.8

Int. Cl. C08g *17/017*

U.S. Cl. 260—78.3 R **9 Claims**

In production of polyesters from a α,αα-substituted-β-propiolactones, amides of acids of phosphorus are used as initiators for the polymerization.

3,691,139

SODIUM MALEATE PEROXYHYDRATE

John H. Blumbergs, Highland Park, and Paul R. Mucenieks, Trenton, both of N.J., assignors to FMC Corporation, New York, N.Y.

Filed June 18, 1970, Ser. No. 47,551

Int. Cl. C08f *27/04*

U.S. Cl. 260—78.4 R **2 Claims**

Sodium maleate peroxyhydrate, useful as a combined detergent builder and bleach, is described, together with its preparation.

3,691,140

ACRYLATE COPOLYMER MICROSPHERES

Spencer Ferguson Silver, 3 M Center, St. Paul, Minn.

Filed March 9, 1970, Ser. No. 17,880

Int. Cl. C08f *15/26*

U.S. Cl. 260—78.5 **19 Claims**

Infusible, solvent-dispersible, solvent-insoluble, inherently tacky, elastomeric copolymer microspheres consist essentially of about 90 percent to about 99.5 percent by weight of at least one alkyl acrylate ester and about 10 to about 0.5 percent by weight of at least one monomer selected from the group consisting of substantially oil-insoluble, water-soluble, ionic monomers and maleic anhydride. The microspheres are prepared by aqueous suspension polymerization utilizing emulsifier in an amount greater than the critical micelle concentration in the absence of externally added protective colloids or the like.

ERRATUM

For Class 260—78.5 CL see:
Patent No. 3,691,080

3,691,141

CROSSLINKED TERPOLYMERS OBTAINED WITHOUT SULFUR AND VULCANIZING AGENTS AND METHOD FOR PREPARING SAME

Giorgio Corradini, Via Cupello, 11/A; Giuseppe Ghetti, Via Cesare Battisti, 11; Sabastiano Cesca, Via Pace, 7/C, all of San Donato Milanese, and Sergio Arrighetti, Via Caldera 11, Milan, all of Italy

Filed April 23, 1970, Ser. No. 31,410

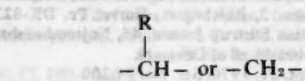
Claims priority, application Italy, April 23, 1969, 15875 A/69

Int. Cl. C08f *15/40, 17/00, 19/00*

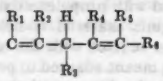
U.S. Cl. 260—80.78 **11 Claims**

Terpolymers are disclosed which are subject to crosslinking in the absence of any vulcanizing agent or accelerator and

which are obtained from α-olefine monomers and a terpolymer having side chains consisting of a



group which is directly linked to two carbon atoms, each of which has an ethylenic bond, e.g.:



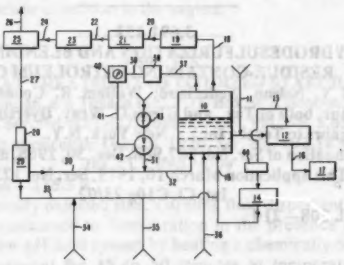
wherein R_1, R_2, R_3, R_4, R_5, and R_6 are selected from the group consisting of hydrogen and hydrocarbon radicals which contain from one to five carbon atoms and which may include pairs of radicals that may be cyclized to form one or more rings having from four to seven carbon atoms.

3,691,142

CONTROL SYSTEM FOR AN ETHYLENE COPOLYMERIZATION PROCESS

Robert E. A. Petersen, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 29, 1969, Ser. No. 828,876
Int. Cl. C08f *15/40, 15/04, 1/28*
U.S. Cl. 260—80.78 1 Claim



In manufacturing ethylene copolymers in a gas-liquid phase reactor general reactor fouling is avoided by regulating ethylene feed in response to gas pressure in the reactor.

3,691,143

METHOD FOR RECOVERING A SOLVENT AND AN ELASTOMERIC POLYMER FROM AN ELASTOMERIC POLYMER SOLUTION

Takashi Kadowaki; Takeo Iwasaki; Yutaka Mitsuta, all of Nishikubiki-gun, and Kenji Shimada, Itoigawa, all of Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha and Nippon Alpin Rubber Co., Ltd.

Filed July 14, 1970, Ser. No. 54,853
Claims priority, application Japan, July 22, 1969, 44/57406
Int. Cl. C08d *5/02*; C08f *1/88*
U.S. Cl. 260—85.5 5 Claims

A solvent and an elastomeric polymer are recovered and separated from a polymer solution obtained by a solution polymerization by treating the polymer solution with steam in the presence of a phosphate of polyoxyethylene alkyl ether or polyoxyethylene alkylaryl ether at pH value of more than 7 in an aqueous phase.

3,691,144

OLEFIN POLYMERIZATION USING COMPLEXES OF MO AND W, CONTAINING NO WITH ORGANOALUMINUMS

Ernest A. Zuech, c/o Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 717,023, March 28, 1968, which is a continuation-in-part of Ser. Nos. 694,873, Jan. 2, 1968, abandoned, and Ser. No. 635,700, May 3, 1967, abandoned.
This application Sept. 17, 1970, Ser. No. 73,231
Int. Cl. C08f *3/02, 15/04*
U.S. Cl. 260—93.1 15 Claims

A process for the conversion of olefinic hydrocarbons according to the olefin reaction (e.g., the olefin disproportionation reaction) by contacting the olefinic hydrocarbon with a catalyst comprising a coordination compound of molybdenum or tungsten complexed with NO, together with an organoaluminum adjuvant.

3,691,145

PRODUCTION OF POLYETHYLENE BY THE HIGH PRESSURE PROCESS USING A MIXTURE OF TERTIARY BUTYL HYDROPEROXIDE AND OXYGEN AS THE INITIATOR

Volker Gierth; Hans Gropper; Franc Georg Mietzner, all of Ludwigshafen, and Friedrich Urban, Limburgerhof, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed Aug. 6, 1970, Ser. No. 61,832
Int. Cl. C08f *1/60, 3/04*
U.S. Cl. 260—94.9 R 5 Claims

Production of polyethylene by polymerizing ethylene at elevated temperatures and elevated pressure under the action of a polymerization initiator, consisting of oxygen and t-butyl hydroperoxide, and of a polymerization regulator. The process of the invention is characterized in that temperature ranging from 310° to 400°C are used and that the polymerization initiator consists of from 1 to 12 molar parts of oxygen and from 1 to 5 molar parts of t-butyl hydroperoxide per million molar parts of the ethylene being polymerized. The process of the invention is preferably carried out continuously in a tubular reactor. The process permits easy control of the reaction with high yields and provides products with high flexibility and elongation.

3,691,146

Patent Not Issued For This Number

3,691,147

(4-L-THREONINE)-OXYTOCIN

Maurice Manning, Toledo, Ohio, assignor to The Medical College of Ohio, Toledo, Ohio

Filed June 5, 1970, Ser. No. 43,943
Int. Cl. C07c *103/52*
U.S. Cl. 260—112.5 1 Claim

A novel biologically active (4-L-threonine)-oxytocin which is an analog of oxytocin in which the glutamine residue in position four is replaced by a threonine residue.

3,691,148
INSOLUBLE HETEROCYCLIC DISAZO DYES

Richard Peter, and Hans-Joerg Angliker, both of Basel, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

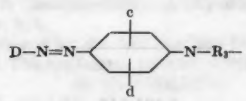
Continuation-in-part of Ser. No. 693,703, Dec. 27, 1967, abandoned. This application Aug. 7, 1970, Ser. No. 62,165

Claims priority, application Switzerland, Jan. 4, 1967, 77/67; May 26, 1967, 7468/67; Dec. 11, 1967, 17307/67

Int. Cl. C09b *33/16*; D06p *3/54*, *3/72*

U.S. Cl. 260—158 5 Claims

Heterocyclic disazo compounds containing two heterocyclicazo-aniline groups of general formula

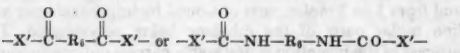


where D is a heterocyclic diazo component such as thiazolyl, benzthiazolyl, benzimidazolyl, etc.

c and *d* are such substituents as methyl, ethoxy, phenoxy and acylamino

R_1 can be hydrogen, lower alkyl and lower alkyl substituted by cyano, phenyl, hydroxy, alkoxy, etc.

R_3 can be alkylene and substituted alkylene, etc. are bridged by a bridging group, Z, which has no dyestuff characteristics, such as —O—R_5O—, —NH—R_5NH— where R_5 is aliphatic, cyclo- or araliphatic, aromatic or acyl,



where X' is oxygen, sulfur or —NH and R_6 is aliphatic, cycloaliphatic, aromatic or heterocyclic. The compounds are useful in dyeing synthetic fibers, especially polyester and acrylic.

3,691,149
DISAZO PIGMENTS

Willy Mueller; Karl Ronco, both of Riehen, and Rudolf Mory, Dornach, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed April 9, 1970, Ser. No. 27,102

Claims priority, application Switzerland, April 25, 1969, 6360/69

Int. Cl. C07c *107/08*; C09b *43/12*

U.S. Cl. 260—174 9 Claims

Disazo dyestuffs of the formula

$$R_1—N \quad N—R_2—CONH—R_3—NHOC—R_2—N \quad N—R_1,$$

in which R_1 represents an aryl residue, R_2 represents a hydroxynaphthalene residue in which the azo, hydroxy and —CO groups are in 1, 2, 3-position, or the residue of an enolized or enolizable ketomethylene compound and R_3 represents a phenylene or diphenylene residue containing at least one carboxylic acid ester, carboxylic acid amide, sulphonic acid ester, sulphonic acid amide or sulphone group are valuable pigments which are useful for coloring plastics and lacquers in yellow to red shades.

3,691,150
PROCESS FOR PREPARING PROPYLENE GLYCOL ALGINATE

Vagn Nielsen, Janelyst, Edwin Rahrs Vej, DK-8220 Brabrand; Jens Birk Lauridsen, 3, Ebiehegnet, Horret Pr. DK-8230 Marslet, and Kristian Stistrup Jensen, 45, Nojsomhedsbakken, DK-8220 Brabrand, all of Denmark

Filed Sept. 21, 1970, Ser. No. 74,200

Int. Cl. C08b *19/10*

U.S. Cl. 260—209.6 1 Claim

In order to minimize risks of explosion and to utilize the reactor space more intensively, in the preparation of propylene glycol alginate by reacting alginic acid or partially neutralized alginic acid with propylene oxide in the presence of a diluent, the alginic material is held or conveyed at moderate speed in the reactor with the aid of stationary or slowly moving holding means adapted to permit the passage of gases and liquids, while the diluent with the propylene oxide is caused to flow through the holding means and the alginic material until the reaction is substantially completed.

3,691,151
KANAMYCIN EMBONATE

Giuseppe Guadagnini, Sunnazzaro dei Burgondi, and Franco Fabi, Milan, both of Italy, assignors to Pierrel S.p.A., Milan, Italy

Filed Aug. 7, 1970, Ser. No. 62,147

Claims priority, application Great Britain, Aug. 14, 1969, 40,754/69

Int. Cl. C07g *11/00*

U.S. Cl. 260—210 K 1 Claim

Kanamycin embonate and pharmaceutical preparations thereof, useful as antibiotics, are disclosed. Kanamycin embonate is prepared by reacting a water soluble salt of embonic acid with an aqueous solution of kanamycin or a salt thereof.

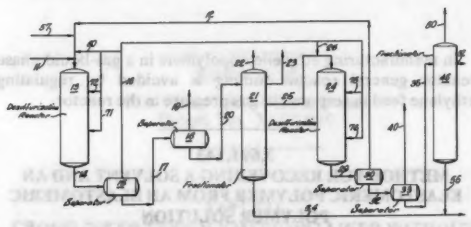
3,691,152
HYDRODESULFURIZATION AND BLENDING OF RESIDUE-CONTAINING PETROLEUM OIL

Gerald V. Nelson, Nederland; William R. Coons, Jr., Port Arthur, both of Tex., and Glenn C. Wray, Dyersburg, Tenn., assignors to Texaco Inc., New York, N.Y.

Continuation of Ser. No. 787,908, Dec. 30, 1968, abandoned. This application March 10, 1971, Ser. No. 123,004

Int. Cl. C10g *23/02*

U.S. Cl. 208—210 6 Claims



Petroleum oils of reduced sulfur content are produced by introducing into a catalytic hydrodesulfurization zone a residue-containing petroleum oil of which at least 10 volume per cent boils below 1,000°F. separating the hydrodesulfurization zone effluent into a fraction boiling below about 1,000°F. and a fraction boiling above about 1,000°F. desulfurizing the fraction boiling below about 1,000°F. and combining the product with the fraction boiling above about 1,000°F. The catalyst in the first hydrodesulfurization should have a surface area of at least 250 $m^2/g.$, a pore volume of at least 0.6 cc/g and should contain at least 2 percent by weight silica.

3,691,153

POLYSACCHARIDE OXIDIZED PRODUCTS

Krishna P. Vemuri, Appleton, Wis., assignor to Abitibi Paper Company, Ltd., Toronto, Ontario, Canada

Filed June 5, 1969, Ser. No. 830,664
Claims priority, application Canada, Sept. 30, 1968, 031,235
Int. Cl. C07c *47/18*
U.S. Cl. 260—209 R 3 Claims

A novel oxidized non cellulosic polysaccharide which is useful as a wet strength additive in paper making is described. The starting material is preferably a naturally occurring polysaccharide gum or a seaweed extractive, and these materials are oxidized, without degradation of the ring structure of the hexose units, with an acid-dichromate system so that at least some of the initial primary alcohol groups at the C_6 positions are oxidized to aldehyde groups.

3,691,154

ABSORBENT FIBERS OF PHOSPHORYLATED CELLULOSE WITH ION EXCHANGE PROPERTIES

Leo J. Bernardin, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed May 5, 1970, Ser. No. 34,878
Int. Cl. C08b *5/00*; D06m *11/08, 13/26*
U.S. Cl. 260—219 9 Claims

Highly absorbent cellulose fibers with ion exchange properties are obtained by phosphorylating cellulose fibers, hydrolyzing the fiber walls with acid, converting the phosphorylated fibers to the sodium salt form, mechanically refining these fibers to rupture the primary fiber wall and permit subsequent swelling or ballooning, acidifying the refined fibers to reconvert the phosphorylated cellulose into the acid form, and drying the fibers in a manner to substantially avoid appreciable hydrogen bonding. The acid pH of these highly absorbent fibers makes them ideally suited as an absorbent component in catamenial tampons employed to establish and maintain a desirable acidic condition in the vagina.

3,691,155

HEAT TREATMENT OF OXIDIZED STARCH

Jack H. Kolaian, c/o Texaco Inc., P.O. Box 509, Beacon, N.Y.

Division of Ser. No. 837,887, June 3, 1969, Pat. No. 3,637,493. This application Dec. 28, 1970, Ser. No. 102,165
Int. Cl. C08b *19/04*
U.S. Cl. 260—233.3 R 4 Claims

A chemically oxidized starch drilling fluid dispersant having improved resistance to deterioration in the presence of bacteria in a low pH mud system by heating a chemically oxidized starch dispersant for 15 to 50 minutes at temperatures of 400°–475° F. and an aqueous drilling fluid containing the heated chemically oxidized starch dispersant.

3,691,156

Patent Not Issued For This Number

3,691,157

PREPARATION OF 7-SUBSTITUTED-1-(2-DIETHYLAMINOETHYL)-5-(2-HALOPHENYL)-1,3-DIHYDRO-2H-1,4-BENZODIAZEPIN-2-ONES

Rodney Ian Fryer, 5 Eton Drive, North Caldwell, and Leo Henryk Sterbach, 10 Woodmont Road, Upper Montclair, N.J.

Continuation-in-part of Ser. No. 733,817, June 3, 1968, abandoned. This application Aug. 12, 1970, Ser. No. 63,273
Int. Cl. C07d *53/06*
U.S. Cl. 260—239.3 D 6 Claims

7-Substituted-1-(2-diethylaminoethyl)-5-(2-halophenyl)-1,3-dihydro-2H-1,4-benzodiazepin-2-ones are prepared starting with a 4-substituted-2-(2-halobenzoyl)aniline by a multistep procedure. The product compounds produced by the process of the present invention are useful as tranquillizers, muscle relaxants, anti-convulsants and hypnotics.

3,691,158

HEXACHLOROPENTADIENE ADDUCTS OF UNSATURATED AMIDES OF AZABICYCLONONANE

Robert R. Mod, 4600 San Harco Road, New Orleans, La.; Frank C. Magne, 2223 Franklin Ave., New Orleans, La., and Evald L. Skau, 6473 Memphis St., New Orleans, La.

Division of Ser. No. 878,922, Nov. 21, 1969. This application Dec. 16, 1971, Ser. No. 208,948
Int. Cl. C07d *41/04*
U.S. Cl. 260—239 BA 1 Claim

This invention relates to certain new nitrogen-containing compounds, more particularly to N-substituted and N,N-disubstituted amides, the acyl moieties of which are the acyl moieties of the hexachlorocyclopentadiene adducts of either 9-octadecenoic or 10-undecenoic acids.

The compounds which are the subject of this invention are characterized by the fact that as growth inhibitors they are effective against a variety of bacteria, yeasts, and molds, some of which are pathogenic. They are also useful as plasticizers.

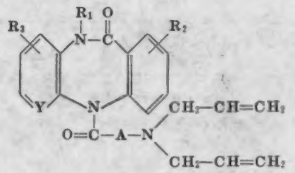
3,691,159

TRICYCLIC HETEROCYCLIC AMIDES OF DIALLYLAMINO-ALKANOIC ACIDS AND SALTS THEREOF

Gunther Schmidt, Joh.-Seb.-Bach-Strasse 27; Robert Engelhorn, Talfeldstrasse 45, and Matyas Leitold, Mozartstrasse 22, all of 795 Biberach/Riss, Germany

Filed July 13, 1970, Ser. No. 54,624
Claims priority, application Germany, July 18, 1969, P 19 36 670.2
Int. Cl. C07d *53/02*
U.S. Cl. 260—239.3 T 12 Claims

Compounds of the formula



wherein

R_1 is hydrogen or alkyl of one to four carbon atoms,

R_2 and R_3 are each hydrogen or halogen,

Y is nitrogen or —CH—, and

A is alkylene of one to two carbon atoms,

and their non-toxic, pharmacologically acceptable acid addition salts; the compounds as well as their salts are useful as ulcer inhibitors and stomach juice secretion inhibitors in warm-blooded animals.

3,691,160

4-HYDRAZONOMETHYLTHIAZOLE ANTITRYPANOCIDES

Patrick Roffey, Camerley, and John Pomfret Verge, Henley-on-Thames, both of England, assignors to Lilly Industries, Ltd., London, England

Filed July 8, 1970, Ser. No. 53,305
Claims priority, application Great Britain, July 15, 1969, 35,593/69; April 20, 1970, 18,801/70
Int. Cl. C07d *91/32*
U.S. Cl. 260—240 A 12 Claims

2-(5-Nitro-2-furyl)-, 2-(5-nitro-2-thienyl)-, 2-[2-(5-nitro-2-furyl)vinyl]-, and 2-[2-(5-nitro-2-thienyl)vinyl]-4-hydrazonomethylthiazoles trypanocidally active compounds

are prepared by reacting the corresponding 4-(C_1–C_7 alkanoyl)thiazole with a hydrazine of the formula:

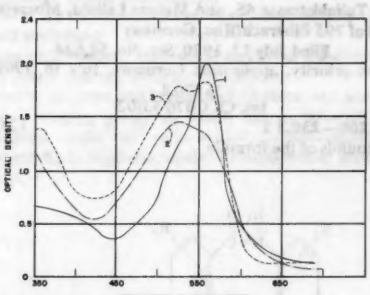
wherein R_1 and R_2 separately are H, C_1–C_6 alkyl, C_1–C_6 hydroxyalkyl, C_1–C_6 alkoxyalkyl and R_1 and R_2 together are alkylene, oxaalkylene, thiaalkylene, thiaoxyalkylene, thiadioxyalkylene or azaalkylene bridge.

3,691,161

NOVEL DIPYRRYLMETHENE DYES

Stanley M. Bloom, Waban, and Paulina P. Garcia, Arlington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed April 23, 1968, Ser. No. 723,474
Int. Cl. C09b 23/04
U.S. Cl. 260—240.7 **17 Claims**



Novel dipyrrylmethene dyes, particularly 5 and/or 5'-o-dihydroxyphenyl dipyrrylmethene dyes, and 1:1 metal complexes thereof.

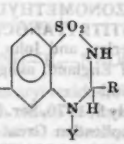
3,691,162

DERIVATIVES OF 1,2,4-BENZOTHIADIAZINE-4-CARBOXALDEHYDE-1,1-DIOXIDE

Harry Louis Yale, New Brunswick, N.J., assignors to E. L. Squibb & Sons, Inc., Princeton, N.J.

Filed Feb. 16, 1970, Ser. No. 11,906
Int. Cl. C07d 93/32
U.S. Cl. 260—243 D **6 Claims**

The present invention pertains to hypotensive agents of the formula



wherein X may be halogen, lower alkyl, trifluoromethyl or nitro; Y may be lower alkyl or lower alkene of at least three carbon atoms or —CHO; and R may be hydrogen, lower alkyl, lower cycloalkyl or aralkyl.

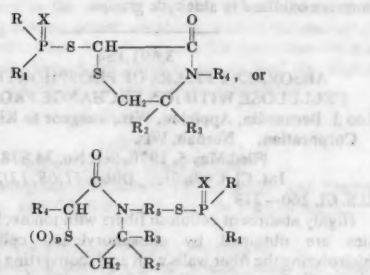
3,691,163

CERTAIN PHOSPHORUS-CONTAINING THIOMORPHOLINONES

Karoly Szabo, Syracuse, N.Y., assignor to Esso Research and Engineering Company

Filed Aug. 3, 1970, Ser. No. 60,774
Int. Cl. C07d 93/10
U.S. Cl. 260—243 B **18 Claims**

Organophosphorus compounds containing the thiomorpholinone moiety have been found to be highly active both as contact and systemic insecticides and miticides. These compounds also possess excellent acaricidal activity. These compounds are represented by one of the following structural formulas:



wherein R and R_1 may be the same or different and are selected from the group consisting of C_1 to C_6 alkoxy, C_1 to C_6 alkyl, C_2 to C_6 alkoxymethyl, and C_1 to C_6 alkylthio; provided that at least one of them is alkoxy; R_2 and R_3 may be the same or different and are selected from the group consisting of hydrogen and C_1 to C_6 alkyl; R_4 is one selected from the group consisting of hydrogen, C_1–C_6 alkyl, C_1–C_6 alkylthio, C_1–C_6 alkoxyl and C_1–C_6 alkyl optionally substituted with hydroxyl, amino, cyano, C_1–C_6 N alkyl carbamoyl, C_1–C_6 alkoxycarbamido, substituted and unsubstituted phenyl, C_1–C_6 carboalkoxyalkyl and acetoxyl; R_5 is one selected from the group consisting of $(CH_2)_n$ and CH_2–CHR_6, wherein R_6 is one selected from the group consisting of hydrogen, C_1 to C_6 alkyl, C_1 to C_6 alkylthio; X is *O* or S, *n* is an integer ranging from 1 to 6 and *p* is 0–2.

3,691,164

PRODUCTION IMPROVEMENT FOR SUBSTITUTED TRIAZINES

Ronald Baker, and Thomas Kirkly Storer, both of Blackley, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Aug. 24, 1970, Ser. No. 66,579
Claims priority, application Great Britain, Nov. 20, 1969, 56,850/69
Int. Cl. C07d 55/46
U.S. Cl. 260—249.8 **5 Claims**

In the manufacture of the dyestuff intermediates of U.K. Pat. specification No. 914 932 by condensing 1 mole of an alkylene diamine and 1 mole of a N-(2,4-dihalogeno-s-triazin-6-yl) sulphoaniline or sulphonaphthylamine, products of higher purity are obtained by adding a neutral solution of the latter to an aqueous solution of a mineral acid salt of an alkylene diamine, the minimum amount of the diamine being 1. 2 molecular proportions of the 1,3,5,-triazine derivative, and the amount of mineral acid present being at least 1.9 molecular proportions, based on the alkylene diamine, and simultaneously adding an alkali to maintain the pH of the reaction mixture in the region of 6.5–7. A reaction temperature of 30° C. to 35° C is preferred.

Alternatively, instead of adding alkali, 1-2moles of an alkali metal bicarbonate are added to the mineral acid solution of the alkylene diamine before starting to add the s-triazine compound.

3,691,165

INTERMEDIATES FOR 3-HYDRAZINO-1,2,8,9-TETRAAZOPHENALENES

Karl J. Doehel, Ossining, N.Y., and John E. Francis, Pleasantville, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 715,555, March 25, 1968, Pat. No. 3,578,665, Continuation-in-part of Ser. No. 583,980, Oct. 3, 1966, abandoned, Continuation-in-part of Ser. No. 539,303, April 1, 1966, abandoned, Continuation-in-part of Ser. No. 445,762, April 5, 1965, abandoned. This application April 6, 1970, Ser. No. 31,068

Int. Cl. C07d *51/08, 51/04*

U.S. Cl. 260—250 A 12 Claims

3-Hydrazino-1,2,8,9-tetraazaphenalenes optionally substituted in the 4, 5, 6, 7 and/or 9 positions and their salts are cardiovascular agents and are prepared from 3-thiono-2,3-dihydro-1,2,8,9-tetraazaphenalenes. Representative embodiments are 3-hydrazino-1,2,8,9-tetraazaphenalene and 3-hydrazino-9-phenyl-1,2,8,9-tetraazaphenalene.

3,691,166

SUBSTITUTED QUINOXALINES

William A. Bolhofer, Frederick, and John J. Baldwin, Lansdale, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Dec. 19, 1969, Ser. No. 886,791The portion of the term of this patent subsequent to May 5, 1987, has been disclaimed.

Int. Cl. C07d *51/78*

U.S. Cl. 260—250 R 4 Claims

Novel 2,3-dichloro-5 or 6-hydroxyethylcarbamoyl-quinoxalines, further substituted with methyl and chloro radicals are disclosed, along with processes for their preparation. These compounds are prepared by the cyclization of a substituted diamino benzoic acid with diethyl oxalate, treating the dihydroxyquinoxalinecarboxylic acid obtained with phosphorus pentachloride in phosphorus oxy-chloride, which is reacted with ethanolamine to obtain the product. Compositions using these compounds as the active ingredient for the inhibition of gastric acidity are also disclosed.

3,691,167

5,6,7,8-TETRA HYDRO-2(2,3H)-QUINAZOLINONES

Goetz E. Hardtmann, Florham Park, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

Continuation-in-part of Ser. No. 792,891, Dec. 20, 1968, abandoned. This application March 18, 1971, Ser. No. 125,856

Int. Cl. C07d *51/48*

U.S. Cl. 260—251 A 5 Claims

alkyl-4-aryl-5,6,7,8-tetrahydro-2(2,3H)-quinazolinones, e.g. 3-methyl-4-phenyl-5,6,7,8-tetrahydro-2(2,3H)-quinazolinone having pharmacological activity in animals and useful as anti-inflammatory agents. Also disclosed is process for preparation of said 2(2,3H)-quinazolinones involving reaction of a 2-benzoyl-cyclohexanone with a lower alkylurea.

3,691,168

5-ARYLBENZO [B] [1,7] NAPHTHYRIDINE DERIVATIVES

Milton Wolf, West Chester, and James L. Diebold, Havertown, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed April 1, 1970, Ser. No. 24,836

Int. Cl. C07d *39/10*

U.S. Cl. 260—283 S 5 Claims

This invention concerns 5-arylbenzo[b] [1,7]naphthyridine derivatives which have pharmacological activity as antitubercular agents. Certain compounds also possess amebacidal or central nervous system depressant activity.

3,691,169

2-(ALKYLTHIOALKYL)-1,2,3,4-TETRAHYDROISOQUINOLINES

Allan Poe Gray, Chittenden, Vt., assignor to Neisler Laboratories, Inc.

Division of Ser. No. 680,354, Nov. 3, 1967, Pat. No. 3,549,640. This application Sept. 3, 1970, Ser. No. 69,450

Int. Cl. C07d *33/62*

U.S. Cl. 260—283 S 12 Claims

2-(Alkylthioalkyl)-1,2,3,4-tetrahydroisoquinolines such as 2-(3-ethylthiopropyl)-1,2,3,4-tetrahydroisoquinoline exhibit cardiovascular activity and are useful in the preparation of N-alkylsulfinylalkyl-1,2,3,4-tetrahydroisoquinolines.

3,691,170

2-(THIOCYANOALKYL)-1,2,3,4-TETRAHYDROISOQUINOLINES

Allan Poe Gray, P.O. Box 5439, St. Louis, Mo.

Division of Ser. No. 680,354, Nov. 3, 1967, Pat. No. 3,549,640. This application Sept. 3, 1970, Ser. No. 69,489

Int. Cl. C07d *33/60*

U.S. Cl. 260—283 CN 4 Claims

2-(Thiocyanoalkyl)-1,2,3,4-tetrahydroisoquinolines such as 2-(thiocyanoethyl)-1,2,3,4-tetrahydroisoquinoline exhibit cardiovascular activity.

3,691,171

PROCESS FOR MAKING 2-HYDROXYQUINOLINE-4-CARBOXYLIC ACIDS

Karl-Josef Boosen, La Neuveville, Switzerland, assignor to Lonza Ltd., Basle, Switzerland

Filed May 26, 1970, Ser. No. 40,696

Claims priority, application Switzerland, May 29, 1969, 8109/69

Int. Cl. C07d *33/48*

U.S. Cl. 260—287 R 6 Claims

Process for the preparation of 2-hydroxyquinoline-4-carboxylic acids in which 2-hydroxy-4-halogeno-methyl-quinoline is oxidized with a controlled excess of alkaline hydrogen peroxide.

3,691,172

HYDROXYPHENYL-2-DECAHYDROQUINOLYLCARBINOLS

Carl Kaiser, Haddon Heights, N.J., assignor to Smith Kline & French Laboratories, Philadelphia, Pa.

Filed Nov. 23, 1970, Ser. No. 92,161

Int. Cl. C07d *33/02*

U.S. Cl. 260—289 R 8 Claims

Hydroxyphenyl-2-decahydroquinolylcarbinols prepared by the condensation of an appropriately substituted ether derivative of a hydroxybenzaldehyde with 2-quinolyl lithium followed by removal of the ether group/s and reduction have β-adrenergic stimulant activity. Erythro and threo diastereoisomers may be conveniently separated.

3,691,173

N-SUBSTITUTED 1,2,3,4,4a,10a-HEXAHYDRO-(10H)-1-BENZOPYRANO-[3,2,C]-PYRIDINES

Gerhard Ohnacker; Helmut Daniel, and Hans Machleidt, all of Biberach, Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim/Rhein, Germany

Filed June 20, 1968, Ser. No. 738,398

Claims priority, application Germany, June 21, 1967, T 34142

Int. Cl. C07d *39/00*

U.S. Cl. 260—293.55 4 Claims

The compounds are N-substituted 4a-oxy-1,2,3,4,-4a,10a-hexahydro-(10H)-1-benzopyrano-[3,2-c]-pyridines, useful as sedatives and antiphlogistics in warm-blooded animals.

3,691,174
METALATION OF ALKYL SIDE CHAINS OF ALKYL PYRIDINES, ALKYL QUINOLINES AND ALKYL ISOQUINOLINES

Constantinos G. Screttas, 13 Antinoros Street, Athens, 516, Greece

Continuation-in-part of Ser. No. 646,208, June 15, 1967, abandoned. This application Aug. 7, 1970, Ser. No. 62,198
Int. Cl. C07d 31/20
U.S. Cl. 260—290 R 13 Claims

Metalating alkyl side chains of alkyl pyridines, alkyl quinolines and alkyl isoquinolines by means of certain organometal compounds, exemplified by alkali metal substituted furan compounds and alkali metal substituted methylpyrrole, and 2-thienyllithium. The metalation reaction advantageously is carried out in the presence of an ethereal solvent which forms a stable coordination complex with the metalated compound.

3,691,175
Patent Not Issued For This Number

3,691,176
1-(4-FLUOROPHENOXYPROPYL)-4-ANILINO-PIPERIDINES

Robert Hallas, Waukegan, and John Wayne Cole, Deerfield, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed May 25, 1970, Ser. No. 40,376
Int. Cl. C07d 29/28
U.S. Cl. 260—293.79 6 Claims

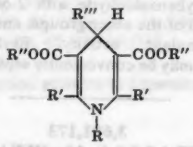
A new series of piperidine derivatives has been discovered; they are the N-[3-(p-fluorophenoxy)propyl]piperidines carrying in the 4-position of the piperidine ring a substituted anilino group. These new compounds and their non-toxic acid addition salts are highly effective analgesics of low toxicity.

3,691,177
CYANOPHENYL-1,4-DIHYDROPYRIDINE DERIVATIVES

Friedrich Bossert, Wuppertal-Elberfeld, and Wulf Vater, Opladen, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 11, 1970, Ser. No. 97,338
Claims priority, application Germany, Dec. 17, 1969, P 19 63 188.0
Int. Cl. C07d 31/46
U.S. Cl. 260—294.9 22 Claims

Cyanophenyl-1,4-dihydropyridine derivatives of the formula:



wherein

R is hydrogen, saturated or unsaturated, straight, branched or cyclic alkyl of one to six carbon atoms, unsubstituted or substituted by hydroxyl or alkoxy of one to three carbon atoms, or benzyl or phenethyl unsubstituted or substituted in the aryl moiety by 1, 2 or 3 members selected from the group consisting of 1 to 3 alkoxy moieties of one to three carbon atoms, 1 or 2 alkyl moieties of one to three carbon atoms and 1 or 2 halogen atoms,

R′ is straight or branched chain alkyl of one to four carbon atoms,

R″ is straight, branched, cyclic, saturated or unsaturated alkyl of one to six carbon atoms, said alkyl interrupted by 1 or 2 oxygen atoms or said alkyl substituted by hydroxyl, and

R‴ is aryl substituted by cyano or by cyano and 1 to 9 members selected from the group consisting of cyano, nitro, amino, acylamino of one to two carbon atoms, hydroxyl, acyloxy of one to two carbon atoms, 1 or 2 alkyl moieties of one to four carbon atoms, 1 or 2 alkoxy moieties of one to four carbon atoms, and 1 or 2 halogen atoms,

are useful for their coronary dilating effect and antihypertensive effects. Processes for the production of these compounds are set forth below.

3,691,178
SUBSTITUTED IMIDAZOLES

John J. Baldwin, Lansdale, Pa., and Frederick C. Novello, Berwyn, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed March 16, 1970, Ser. No. 20,126
Int. Cl. C07d 49/36
U.S. Cl. 260—294.9 11 Claims

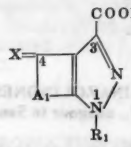
Imidazoles substituted at the 2 and 4(5) positions having an optional substituent in the 1 position are provided. Methods of preparing the novel substituted imidazoles are described. The substituted imidazoles are useful as anti-gout and anti-hyperuricemic agents. Compositions useful in the treatment of gout and hyperuricemia containing a substituted imidazole as the active ingredient are provided.

3,691,179
CYCLOALKANO [C]PYRAZOLE-3-ACIDS

Robert Armistead Lucas, Mendham, N.J., and Herbert Morton Blatter, Summit, N.J., assignors to Ciba Corporation, Summit, N.J.

Filed July 31, 1970, Ser. No. 60,142
Int. Cl. C07d 49/18
U.S. Cl. 260—295.5 S 2 Claims

Cycloalkano[c]pyrazole-3-acids, e.g. those of the formula



R¹=free or functionally converted hydroxy- or aminophenyl
A¹=alkylene
X=HOH or O

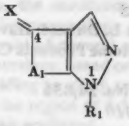
and functional derivatives thereof, exhibit antiviral effects.

3,691,180
CYCLOALKANO [C] PYRAZOLES

Herbert Morton Blatter, Summit, N.J., and Robert Armistead Lucas, Mendham, N.J., assignors to Ciba Corporation, Summit, N.J.

Continuation-in-part of Ser. No. 763,410, Sept. 27, 1968. This application July 31, 1970, Ser. No. 60,143
Int. Cl. C07d 49/18
U.S. Cl. 260—295.5 S 4 Claims

Cycloalkano[c]pyrazoles, e.g. those of the formula



R₁=free or functionally converted hydroxy- or aminophenyl
A₁=alkylene
X=2H, HOH, or O

quaternaries and salts thereof, exhibit antiviral effects and are also valuable intermediates in the preparation of other pharmacologically useful compounds.

3,691,181

CERTAIN ACYL DERIVATIVES OF THE ANTIBIOTIC T-2636C

Toyokazu Kishi, Nara; Setsuo Harada; Komei Mizuno, both of Osaka; Eiji Higashide, Hyogo, and Motoo Shibata, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Higashi-ku, Osaka, Japan

Filed Oct. 27, 1969, Ser. No. 869,864
Claims priority, application Japan, Oct. 26, 1968, 43/7143
Int. Cl. C07d *31/36, 7/06*
U.S. Cl. 260—295.5 P 18 Claims

Acyl derivatives of Antibiotic T-2636C useful for inhibiting the growth of Gram positive bacteria and being effective against strains resistant to *Oleandomycin* and *Erythromycin*, and method for production thereof.

3,691,182

Patent Not Issued For This Number

3,691,183

3,5-SUBSTITUTED-1,2,4 THIADIAZOLES

Warren A. Thaler, 133 Deerfield Lane, Matawan, N.J.

Filed May 12, 1970, Ser. No. 36,685
Int. Cl. C07d *91/60*
U.S. Cl. 260—302 SD 17 Claims

3-Halo-1,2,4 thiadiazole-5 sulfenyl halides are produced by reacting cyanodithioimidocarbonate anion with the corresponding halogen. 3-Halo-1,2,4 thiadiazole-5 sulfenyl halides are useful as pesticides and chemical intermediates. Derivatives of the 3-halo-1,2,4 thiadiazole-5 sulfenyl halides include the di(3-halo-1,2,4 thiadiazol-5-yl) disulfides, and are useful as pesticides, antioxidants, and U.V. stabilizers.

3,691,184

CERTAIN 2-ALKOXYMETHYL-3-CHLORO-Δ 3-1,2,4-THIADIAZOLIN-5-ONES AND THEIR PREPARATION

Peter Fischer, Odenthal-Osenau, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 18, 1970, Ser. No. 38,577
Claims priority, application Germany, May 21, 1969, P 19 25 995.1
Int. Cl. C07d *91/60*
U.S. Cl. 260—302 D 15 Claims

2-Alkoxymethyl-3-chloro-Δ^3-1,2,4-thiadiozolin-5-ones are obtained when a carbodiimide of the formula

$$R^1O—CH_2—N \quad C \quad N-CH_2—OR^1,$$

in which R^1 is an aliphatic radical, is reacted with chlorocarbonylsulphenyl chloride in the presence of an inert, organic diluent in the temperature range of 0° to 100° C and the diluent and the chloromethylalkyl ether liberated on heating are removed at a temperature in the region of 50° to 120°C. The new compounds are useful as herbicides.

3,691,185

5-ARYL AND ARYLPHENYL SULFONIC ACIDS IN TREATING INFLAMMATION

Lewis H. Sarett, Rolling Hill Road, Skillman, N.J., and John Hannah, 155 Idlebrook Lane, Matawan, N.J.

Continuation-in-part of Ser. No. 836,610, June 25, 1969. This application April 20, 1970, Ser. No. 30,325
Int. Cl. A61k *27/00*
U.S. Cl. 424—303 5 Claims

5-Aryl and heteroarylphenyl sulfonic acids and their derivatives are described and the processes for preparing the same are disclosed. These compounds exhibit anti-inflammatory properties and also possess an effective degree of anti-pyretic and analgesic activity.

3,691,186

CERTAIN SUBSTITUTED BENZTHIAZOLE-N-OXIDES AND THEIR PREPARATION

Klaus Wagner, and Ernst Roos, both of Cologne, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 29, 1970, Ser. No. 6,922
Claims priority, application Germany, Jan. 31, 1970, P 19 04 653.8
Int. Cl. C07d *91/44*
U.S. Cl. 260—304 10 Claims

Novel benzthiazole-N-oxides are obtainable by the reaction of halogenonitrobenzenes additionally activated by one or more electronegative substituents with mercaptomethyl compounds in an inert solvant in the presence of a base in the temperature range of from 20° to 160° C.

The new benzthiazole-N-oxides are suitable for use as colored pigments e.g. for dyeing plastics.

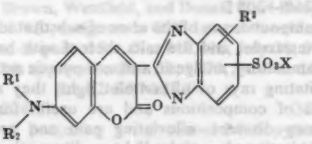
3,691,187

CERTAIN BENZOTHIAZOLYL-COUMARINS

Gerhard Grau, 17 Kirchenstrasse, 6703, Limburgerhof, Germany

Filed April 26, 1971, Ser. No. 137,681
Claims priority, application Germany, May 5, 1970, P 20 21 899.9
Int. Cl. C07d *99/10*
U.S. Cl. 260—304 2 Claims

Dyes of the formula:



especially in the form of the sodium, potassium or ammonium salts of the sulfonic acids. The dyes are particularly useful for dyeing synthetic polyamide textile materials.

3,691,188

METHOD FOR PREPARING PENICILLIN SULFOXIDES

Douglas O. Spry, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 10, 1970, Ser. No. 62,717
Int. Cl. C07d *99/16*
U.S. Cl. 260—306.7 7 Claims

6-Aminopenicillanic acid, 6-acylaminopenicillanic acids, 2-alkanoyloxymethyl-2-methyl-6-acylaminopenam-3-carboxylic acids and the esters thereof are oxidized to the corresponding penicillin sulfoxides in inert solvents with ozone at a temperature between about −10° and 35° C. The penicillin sulfoxides obtained thereby are useful for conversion to cephalosporin antibiotics.

3,691,189

PREPARATION OF ISOXAZOLYL 5-HYDROXYHEPTANOIC AND LACTONES

Gabriel Saucy, Essex Fells, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jan. 5, 1970, Ser. No. 811
Int. Cl. C07d *85/22*
U.S. Cl. 260—307 H 6 Claims

Isoxazolyl-5-hydroxyheptanoic acid lactones which are intermediates useful in the total synthesis of steroids are prepared by reacting the corresponding isoxazolyl-5-oxo-heptanals with a metal alkoxide at a temperature in the range from about 20° C. to the reflux temperature of the reaction medium. Direct conversion of the precursor isoxazolyl-5-oxo-1-heptanol into the product lactone can be carried out in a single vessel by using a mixed reagent comprising an oxidizing re-

agent (silver carbonate) and the said metal alkoxide at the same conditions as for the above last step reaction.

3,691,190

ISOXAZOLYL-SUBSTITUTED BENZINDENEDIONES

Gabriel Saucy, Durrmattweg 23, 4144 Arlesheim, Switzerland, and John William Scott, 125 Fells Road, Essex Fells, N.J.

Continuation-in-part of Ser. No. 778,314, Nov. 22, 1968. This application May 21, 1970, Ser. No. 39,560

Int. Cl. C07d *85/22*

U.S. Cl. 260—307 H 7 Claims

Processes and intermediates leading to steroids of the 19-nor and estrane series are described. The A-ring of the steroid is constructed onto a BCD-tricyclic intermediate by degradation of a 3,5-disubstituted-4-isoxazolylmethylene group to a 3-oxoalkyl group, followed by cyclization.

3,691,191

TETRAZOLE DERIVATIVES

Alfred Sallmann, Bottmingen, and Rudolf Pfister, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed July 16, 1969, Ser. No. 842,355

Claims priority, application Switzerland, July 18, 1968, 10792/68

Int. Cl. C07d *55/56*

U.S. Cl. 260—308 D 9 Claims

The compounds are of the class of substituted 5-(o-anilinobenzyl)-tetrazoles and the salts thereof with bases and have anti-inflammatory, analgesic and anti-pyretic activity; they absorb irritating rays of ultra-violet light; they are active ingredients of compositions and are useful for treating inflammatory diseases, alleviating pain and protecting skin against irritating ultra-violet light; an illustrative embodiment is 5-[o-(2,6-dichloro-anilino)-benzyl]-tetrazole.

3,691,192

AN N-TRITYL-IMIDAZOLE

Karl-Heinz Buchel, Wuppertal-Elberfeld; Erik Regel, Wuppertal-Cronenberg; Ferdinand Grewe, Burscheid; Hans Scheinpflug, and Helmut Kaspers, both of Leverkusen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

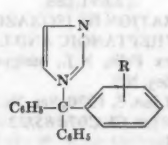
Division of Ser. No. 789,601, Jan. 7, 1969, abandoned. This application May 15, 1970, Ser. No. 37,841

Claims priority, application Germany, Jan. 29, 1968, P 16 70 976.5

Int. Cl. C07d *49/36*

U.S. Cl. 260—309 1 Claim

N-trityl-imidazoles of the formula:



in which R is selected from the group consisting of halo, nitro, cyano, alkyl of one to three carbon atoms, alkoxy of one to three carbon atoms alkylmercapto of one to three carbon atoms and fluoro-substituted alkyl of one to two carbon atoms, are effective against fungi pathogenic to plants.

3,691,193

PYRAZOLE METHYLALKYL SULFOXIDES

Tsung-Ying Shen, Westfield; Alexander R. Matzuk, Colonia, and Conrad P. Dorn, Jr., Plainfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 783,430, Dec. 12, 1968, Pat. No. 3,551,444, which is a division of Ser. No. 592,977, Nov. 9, 1966, Pat. No. 3,438,992. This application June 10, 1970, Ser. No. 45,215

Int. Cl. C07d *49/18*

U.S. Cl. 260—310 R 3 Claims

5- or 6-membered heterocyclic alkyl sulfoxides such as thiophene, pyrrole, pyrazole, imidazole, thiazole, oxazole, isoxazole, pyridine, quinoline, pyran, isothiazole, furan, indazole, benzimidazole, benzoxazole, benzisoxazole, benzothiazole, benzodioxane and indole derivatives having anti-inflammatory, analgesic and anti-pyrectic activity.

3,691,194

3-INDOLE-GLYOXAMIDES

Zinin B. Papanastassiou, Lexington, and John L. Neumeyer, Wayland, both of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Division of Ser. No. 728,818, May 13, 1968, Pat. No. 3,591,603. This application July 30, 1970, Ser. No. 64,902

Int. Cl. C07d *27/56*

U.S. Cl. 260—326.13 R 6 Claims

New 3-indole-glyoxamides and (3-indole)-lower-alkylamines having useful C.N.S. depressant activity and prepared, respectively, by reaction of a 3-indoleglyoxalyl halide or a (3-indole)-lower-alkyl halide with an appropriate amino.

3,691,195

AZIRIDINE DERIVATIVES

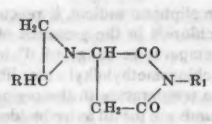
Joerg Sambeth, Carouge/Geneva, and Friedrich Grundschober, Confignon/Geneva, both of Switzerland, assignors to Societe Rhodiaceta, Paris, France

Division of Ser. No. 771,986, Oct. 30, 1968, Pat. No. 3,642,712, which is a continuation-in-part of Ser. Nos. 552,388, May 24, 1966, abandoned, and Ser. No. 552,403, May 24, 1966, abandoned. This application June 9, 1970, Ser. No. 57,018

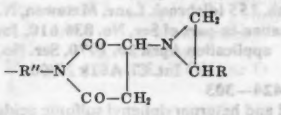
Int. Cl. C07d *27/10*

U.S. Cl. 260—326.3 1 Claim

Novel aziridine derivatives of the formula:

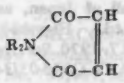


wherein R is hydrogen or methyl and R_1 is hydrogen, methyl, phenyl or a radical of the formula:

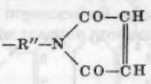


wherein R is as defined above and R'' is an alkylene radical of 2 to 12 carbon atoms or two phenylene residues bonded to

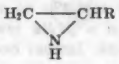
one another by $-CH_2-$, $-SO_2-$ or $-O-$ are produced by reacting stoichiometric amounts of an unsaturated dicarboxylic acid imide of the formula:



wherein R_2 is hydrogen, methyl, phenyl or a radical of the formula:



wherein R'' is as defined above with an aziridine of the formula:



wherein R is as defined above at a temperature of 20° to 200° C. for 10 minutes to 10 hours in the presence or absence of a solvent.

3,691,196
ASYMMETRICAL DIAMIDES OF TETRAIODOTEREPHTHALIC ACID

Hans Suter, Dorflingen; Hans Zutter, and Josef Brunner, both of Schaffhausen, all of Switzerland, assignors to Eprova Aktiengesellschaft, Schaffhausen, Switzerland

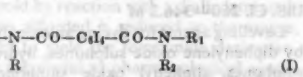
Filed Nov. 10, 1969, Ser. No. 875,594

Claims priority, application Switzerland, Nov. 20, 1968, 17276/68

Int. Cl. C07d 27/04

U.S. Cl. 260—326.3 **12 Claims**

Asymmetrical diamides of tetraiodoterephthalic acid having the general formula



(I)

are relatively non-toxic and are preferentially accumulated in the gall bladder of warm-blooded animals when ingested, injected or applied rectally. Because of their high iodine content, they are effective contrast agents, particularly in cholecystography. They are prepared from mixed anhydrides of tetraiodoterephthalic acid by sequential reaction with amines of the formulas

(II)

and

(III)

In these formulas, X is lower alkylene or phenyl-lower-alkylene, R is hydrogen, lower alkyl or phenyl-lower alkyl. X and R may also jointly be alkylene forming a heterocyclic ring with the associated nitrogen atom. R_1 is hydrogen or lower alkyl, R_2 is lower alkyl, carboxy-lower-alkyl, or lower-carbalkoxy-lower-alkyl or R_1 and R_2 jointly are lower-alkyleneoxy-lower-alkylene, carboxy-lower-alkylene or lower-carbalkoxy-lower-alkylene. R_3 is hydrogen, lower alkyl, non-toxic amine or non-toxic alkali metal or alkaline earth metal, the amine or metal being selected to make the diamide water soluble.

3,691,197
PREPARATION OF 1-SUBSTITUTED-3-CHLOROPYRROLIDINES

Bernard Beau Brown, 146 Tudor Oval, Westfield, N.J., and John Swidinsky, 1034 S. Orange Ave., Newark, N.J.

Continuation-in-part of Ser. No. 746,284, July 22, 1968, abandoned. This application Dec. 17, 1970, Ser. No. 99,252

Int. Cl. C07d 27/04

U.S. Cl. 260—326.8 **14 Claims**

A method for preparing a 1-hydrocarbyl-3-chloropyrrolidine, particularly, a method of preparing said pyrrolidine by rearrangement of an N-chloro-1-hydrocarbyl-amino-2-chlorobutane to a 1-hydrocarbyl-amino-2,4-dichlorobutane, which then is cyclized. This rearrangement is carried out by treatment of the 2-chlorobutane by treatment with a strongly ionized acid and a free radical generating catalyst. The intermediate dichlorobutane then is cyclized to the chloropyrrolidine by means of treatment with a base. The invention is also concerned with novel compositions including 1-hydrocarbyl-amino-2-chlorobutanes, N-chloro-1-hydrocarbyl-amino-2-chlorobutanes and 1-hydrocarbyl-amino-2,4-dichlorobutanes.

3,691,198
SYNTHESIS OF 1-SUBSTITUTED-3-HALOPYRROLIDINES

Bernard Bean Brown, Westfield, and Donald Carl Ruopp, Belleville, both of N.J., assignors to CPC International Inc.

Continuation-in-part of Ser. No. 748,618, July 30, 1968, abandoned. This application Dec. 21, 1970, Ser. No. 100,506

Int. Cl. C07d 27/04

U.S. Cl. 260—326.8 **38 Claims**

A method of preparing 1-substituted-3-halopyrrolidines, particularly a method of preparing said pyrrolidines by reacting a 1-substituted-Δ^3-pyrroline with a concentrated hydrogen halide aqueous solution at a temperature greater than 100°C. In a preferred embodiment, a supersaturated hydrobromic acid solution is utilized, i.e., one containing about 60 percent hydrogen bromide. The 1-substituted-Δ^3-pyrroline reactant is preferably made by reaction of a cis-1,4-dihalobutene-2 with a primary amine whereupon cyclization takes place. Said 1-substituted-3-halopyrrolidines are intermediates useful in making anti-cholinergics and like materials.

3,691,199
2-HYDROXY-INDOLE-3-DITHIOCARBOXYLATES

Goro Kobayashi; Shinichi Sugawara, both of Nagasaki, and Masatoshi Nagawa, Tokyo, all of Japan, assignors to Sankyo Company Limited

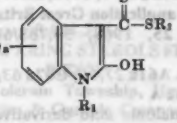
Filed April 15, 1970, Ser. No. 28,976

Claims priority, application Japan, April 19, 1969, 44/30478; Nov. 27, 1969, 44/95242

Int. Cl. C07d 27/56

U.S. Cl. 260—326.12 R **18 Claims**

Novel 2-hydroxyindole-3-dithiocarboxylic acid ester derivatives having the formula



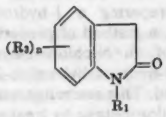
(I)

wherein R_1 is hydrogen atom, a lower alkyl group, an aryl group or an aralkyl group; R_2 is a lower alkyl group or an aralkyl group; R_3 is hydrogen atom, a lower alkyl group, a halog-

atom, nitro group or a lower alkoxy group; and *n* is an integer of 1 – 4 inclusive provided that where *n* is 2 or more R_3 may be the same or different.

These indole derivatives (I) possess potent antibacterial activity against bacteria, particularly those causing bacillary dysentery, especially those resistant to prior art antibacterial agents, favorably via oral route and, thus, they are useful as a medicine for chemotherapeutic purpose.

These indole derivatives (I) can be prepared by reacting the oxyindole derivative having the formula



(II)

wherein R_1, R_3 and *n* are as defined above with carbon disulfide in the presence of a basic condensation catalyst followed by subjecting the resulting product to the reaction with a sufficient amount of an alkylating agent to introduce one alkyl group into said product.

3,691,200

Patent Not Issued For This Number

3,691,201

CYANOIMINO-DITHIOLE-DICARBOXYLIC ESTERS

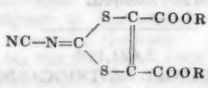
William Lindsay Mosby, North Plainfield, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed May 13, 1970, Ser. No. 37,048

Int. Cl. C07d *71/00;* A61k *27/00*

U.S. Cl. 260—327 M 3 Claims

Novel lower alkyl 2-cyanoimino-1,3-dithiole-4,5-dicarboxylic acid esters are provided which are useful biocides, such as bactericides, fungicides or herbicides and have the following general formula:



wherein R represents an alkyl group of from one to five carbon atoms.

3,691,202

PHENYL-THIENYL- AND PHENYL-FURYL MALONIC ACID DERIVATIVES

Derrick Michael O'Mant, Macclesfield, England, assignor to Imperial Chemical Industries, Limited, London, England

Division of Ser. No. 812,358, April 1, 1969, abandoned. This application July 7, 1970, Ser. No. 53,005

Claims priority, application Great Britain, March 17, 1969, 17,895/69; Oct. 25, 1968, 50,788/68; Dec. 10, 1968, 58,666/69

Int. Cl. A61k *27/00;* C07d *63/12, 5/16*

U.S. Cl. 260—332.2 A 4 Claims

Phenyl-thienyl-malonic acid derivatives and phenyl-furyl-malonic acid derivatives, processes for their preparation, and pharmaceutical compositions comprising them. Compounds have anti-inflammatory, hypocholesterolaemic, analgesic and antipyretic activity. A representative compound is dimethyl α-(5-p-chlorophenyl-thien-2-yl)-α-methylmalonate.

3,691,203

FLUORAN DERIVATIVES FOR PRESSURE SENSITIVE COPYING PAPER

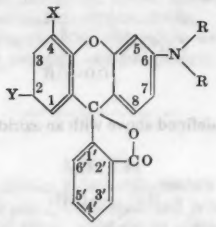
Koichi Koga, Toyonaka; Hideaki Suda, Takaishi, and Takashi Akamatsu, Ashiya, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Higashi-ku, Osaka, Japan

Filed April 7, 1970, Ser. No. 26,410

Int. Cl. C07d *05/34*

U.S. Cl. 260—335 9 Claims

Novel 2,4-di-substituted-6-di-substituted-aminofluorans having the general formula:



wherein X and Y represent chlorine atoms, bromine atoms or C_{1-4} alkyl groups, provided the case where both X and Y are methyl groups is excluded; and R represents a hydrogen atom, a C_{1-4} alkyl group, a benzyl group, a methoxymethyl group, an ethoxymethyl group, a methoxyethyl group or an ethoxyethyl group. These compounds are useful for the production of pressure-sensitive copying paper.

3,691,204

SULFODIHENZOFURAN SULFONES

Hans-Peter Baumann, Munchenstein, and Robert-Christian Keller, Basel, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Division of Ser. No. 620,231, March 3, 1967, Pat. No. 3,538,151. This application June 29, 1970, Ser. No. 60,170

Claims priority, application Switzerland, March 11, 1966, 3577/66

Int. Cl. C07d *5/44*

U.S. Cl. 260—346.2 M 2 Claims

Levelling agents for dyeing anionic dyestuffs are constituted by diphenylene oxide sulphones, hydroxy-diphenylene oxide sulphones, diphenyl oxide sulphones, diphenyl sulphide sulphones, mixtures of these with sulphonated aromatic hydrocarbon oils, their alkali metal and ammonium salts and/or condensation products, and reaction products of these sulphones with formaldehyde or dimethylol urea; an example of dyeing with such a levelling agent is also given. The use of these levelling agents avoids stripy or ring appearance of certain nylon yarns, especially when these are mixed with spandex type fibers.

3,691,205

PRODUCTION OF 6-ALKOXY-5,6-DIHYDRO-4H-PYRANS

Herwig Hoffmann, 21 Knietschstrasse, 6710 Frankenthal; Gerhard Jeschek, 54 Pfortmuellerstrasse, 6718 Gruenstadt; Alfred Kuerzinger, 11 Weinbiestrasse, 6703 Limburgerhof; Erwin Schmidt, 21 Brunckstrasse, 6710 Frankenthal; Willibald Schoenleben, 4 Gugenmus-Weg, 6900 Heidelberg; Dieter Voges, 28 Richard-Wagner-Strasse, 6800 Mannheim, and Siegfried Winderl, 27 Viernheimer Weg, 6900 Heidelberg, all of Germany

Filed Feb. 9, 1971, Ser. No. 113,888

Int. Cl. C07d *7/10*

U.S. Cl. 260—345.9 8 Claims

A process for the production of 6-alkoxy-5,6-dihydro-4H-pyrans by reaction of α,β-unsaturated aldehydes with vinyl ethers. The products are valuable intermediates, for example

for the production of glutaraldehyde or substituted glutaraldehydes which may be used for example as tanning agents for leather.

3,691,206

PRIMER FOR CURED SILICONE RELEASE AGENTS

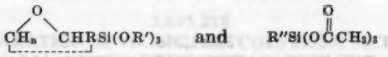
Hal J. Northrup, c/o Dow Corning Corp., Midland, Mich.

Continuation of Ser. No. 739,967, May 22, 1968, which is a division of Ser. No. 491,414, Sept. 29, 1965, Pat. No. 3,427,270. This application March 29, 1971, Ser. No. 129,214

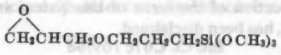
Int. Cl. C08g 31/32; C07f 7/18

U.S. Cl. 260—348 SC **5 Claims**

A composition useful as a coupling agent for promoting the adhesion of a cured organopolysiloxane release agent to a cellulosic substrate is the reaction product of



where R is a divalent or trivalent radical of carbon and hydrogen, R′ is a lower alkyl, *n* is 1 to 2 and R″ is a monovalent hydrocarbon radical. An example is a reaction product of



and vinyltriacetoxysilane.

3,691,207

2 BETA-AZIDO-17 BETA-DIALKYLAMINOALKYLAMINO-5 ALPHA-ANDROSTAN-3 ALPHA-OLS, DERIVATIVES THEREOF AND INTERMEDIATES THERETO

Paul D. Klimstra, Northbrook, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Filed March 9, 1971, Ser. No. 122,527

Int. Cl. C07c 117/00

U.S. Cl. 260—349 **4 Claims**

The above-captioned compounds are produced from the appropriate 17-keto steroid by reaction with a dialkylaminoalkylamine; the imine thus afforded is reduced to the amine, which can be formylated to yield the formamide derivative. The instant compounds are useful as pharmacological agents as is evidenced by their anti-ulcerogenic, anti-viral, and anti-microbial activity.

3,691,208

Patent Not Issued For This Number

3,691,209

ANTHRAQUINONE DYESTUFFS

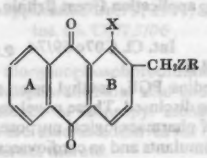
Colin William Greenhalgh, and David Francis Newton, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Filed May 15, 1969, Ser. No. 825,064

Int. Cl. C09b 1/50

U.S. Cl. 260—378 **4 Claims**

Anthraquinone dyestuff of the formula:



wherein X is hydroxy or amino; R is hydroxy, alkoxy, mercapto or alkylmercapto, Z is an optionally further substituted phenylene or naphthylene radical; and the rings A and B can contain substituents; and the use of the said dyestuffs for coloring textile materials.

3,691,210

2-(OMEGA-HYDROQUINONYL-ALKYL)-ANTHRAQUINONES

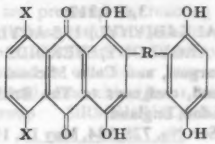
Warren E. Solodar, Newton Centre, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 370,345, May 26, 1964, abandoned. This application Nov. 1, 1967, Ser. No. 703,197

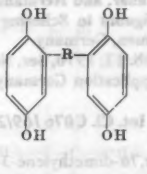
Int. Cl. C07c 49/74

U.S. Cl. 260—380 **4 Claims**

This application relates to the synthesis of compounds having the formula:

(A) 

wherein each X is hydroxy or amino (including secondary amino, e.g., alkylamino), and R is an alkylene radical, preferably a lower alkylene radical containing 1–6 carbon atoms; and to compounds having the formula:

(B) 

wherein R is the same as above; as well as to the use of such compounds in photographic developer compositions and developing processes.

The compounds of formula (A) are also suitable for use as dyes for textile fibers.

3,691,211

PROCESS FOR PREPARING STEROLS FROM TALL OIL PITCH

Donald V. Julian, Colerain Township, Hamilton, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

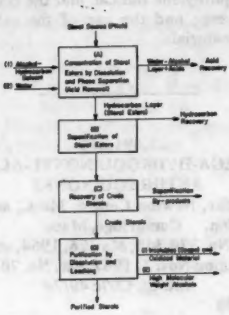
Filed Dec. 7, 1970, Ser. No. 95,735

Int. Cl. C07c 167/38

U.S. Cl. 260—397.25 **6 Claims**

Process for preparing sterols from plant sources, especially

tall oil pitch, by extraction in a water-alcohol-hydrocarbon



mixture followed by saponification and subsequent recrystallization and leaching.

3,691,212

17α-(1',3'-ALKADIYNYL)-17β-ACYLOXY(17β-AROYLOXY) STEROIDS

Peter Feather, Burgess, and Colin Michael Burgess, both of London, England, assignors to The British Drug Houses Limited, London, England

Continuation of Ser. No. 728,884, May 14, 1968, abandoned. This application April 24, 1970, Ser. No. 29,747

Int. Cl. C07c *169/20*

U.S. Cl. 260—397.4 **3 Claims**

17α-(1',3'-Alkadiynyl)-17β-acyloxy(17β-aroyloxy) steroids of the androstane and oestrane series having utility in treatment of conditions or defects of the reproductive system are disclosed.

3,691,213

4-CHLORO-1α,2α,6α,7α-DIMETHYLENE-3-KETO-4-PREGNENE AND METHOD OF MAKING THE SAME

Heinz Gries; Josef Hader, and Hermann Steinbeck, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany

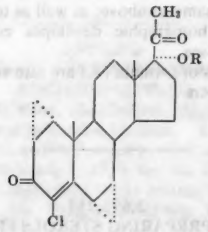
Filed Feb. 12, 1970, Ser. No. 11,013

Claims priority, application Germany, Feb. 13, 1969, P 19 07 804.7

Int. Cl. C07c *169/20*

U.S. Cl. 260—397.4 **6 Claims**

4-chloro-1α,2α,6α,7α-dimethylene-3-keto-4-pregnene of the formula I



(I)

wherein R is hydrogen or an acid residue.

The compounds of the invention have a strong progestational and ovulation-inhibiting action.

The invention also embraces a method of making the compounds and pharmaceutical compositions in which the compounds defined above are the active ingredients.

3,691,214

17-VALERATE ESTER OF 6α,9α-DIFLUOROPREDNISOLONE, ITS COMPOSITIONS AND USE AS AN ANTI-INFLAMMATORY AGENT

Alberto Ercoli, Milan, and Rinaldo Gardi, Carate Brianza, both of Italy, assignors to Warner-Lambert Pharmaceutical Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 707,934, Feb. 26, 1968, abandoned. This application June 8, 1970, Ser. No. 44,560

Int. Cl. C07c *169/34*

U.S. Cl. 260—397.45 **1 Claim**

This invention relates to the new 6α,9α-difluoroprednisolone 17-valerate and to pharmaceutical compositions for topical and systemic use of said compound in the treatment of inflammatory conditions.

3,691,215

THE PREPARATION OF 7α-METHYL-$\Delta^{4,9,11}$-ESTRATRIENES

Lucien Nedelec, Clichy-sous-Bois, Seine-Saint Denis, and Jean-Claude Gasc, Bondy, Seine-Saint Denis, both of France, assignors to Roussel-Uclaf, Paris, France

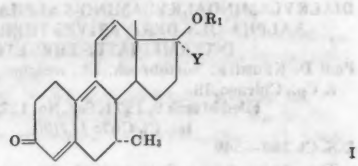
Filed Aug. 31, 1966, Ser. No. 576,240

Claims priority, application France, Sept. 3, 1965, 30381. The portion of the term of this patent subsequent to June 21, 1983, has been disclaimed.

Int. Cl. C07c *169/08*

U.S. Cl. 260—397.45 **14 Claims**

The preparation of 7α-methyl-$\Delta^{4,9,11}$-estratrienes of the formula



I

wherein R_1 is selected from the group consisting of hydrogen and an acyl radical of an organic carboxylic acid of one to 18 carbon atoms and Y is selected from the group consisting of unsaturated aliphatic and halogenated unsaturated aliphatic radicals of two to four carbon atoms.

3,691,216

PGE_2 METHYL ESTER AND PGE_2 METHYL ESTER DIACETATE

Sune Bergstrom, and Jan Sjovall, both of Kemiska Institutionen, Karulinska Institutet, Stockholm 60, Sweden

Continuation-in-part of Ser. No. 203,752, June 20, 1962, Pat. No. 3,598,858, which is a continuation-in-part of Ser. No. 199,209, April 9, 1962, abandoned, which is a continuation-in-part of Ser. No. 738,514, May 28, 1958, Pat. No. 3,069,323. This application Feb. 12, 1971, Ser. No. 115,112

Claims priority, application Great Britain, March 29, 1962, 12,139/62

Int. Cl. C07c *69/74*

U.S. Cl. 260—468 R **3 Claims**

The prostaglandins PGE_2 methyl ester and PGE_2 methyl ester diacetate are disclosed. These novel compounds are useful for a variety of pharmacological purposes, including use as smooth muscle stimulants and as cardiovascular agents.

3,691,217

PROCESS FOR THE PREPARATION OF ACYL CHLORIDES AND BENZALDEHYDES

Thomas J. McCann, Brooklyn, N.Y., assignor to Argus Chemical Corporation, Brooklyn, N.Y.

Filed March 16, 1970, Ser. No. 20,142
Int. Cl. C11c 3/100
U.S. Cl. 260—408 23 Claims

A catalytic process is provided for the preparation of benzoyl chlorides and benzaldehydes comprising reacting benzo polychloromethanes with an organic carboxylic acid to produce the corresponding benzoyl chloride or benzaldehyde plus the acyl chloride corresponding to the organic carboxylic acid, the reaction being carried out in the presence of a tin chloride catalyst.

3,691,218

PREPARATION OF VICINAL GLYCOLS FROM VICINAL DIHALIDES

David Clinton Heckert, Oxford, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed June 29, 1970, Ser. No. 51,024
Int. Cl. C07c 69/30
U.S. Cl. 260—410.7 12 Claims

Process for preparing vicinal glycols which comprises hydrolyzing vicinal dihalides in an amide solvent.

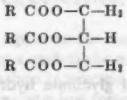
3,691,219

GLYCERYL TRIMONTANATE

Jean Boussely, Paris, France, assignor to Societe Sapchim-Fournier-Cimag, Paris, France

Filed May 4, 1970, Ser. No. 34,642
Claims priority, application France, May 7, 1969, 6914546
Int. Cl. C11c 3/02; C08k 1/36
U.S. Cl. 260—410.7 2 Claims

A composition, glyceryl trimontanate is of the class of esters of montanic acid and has the following structural formula:



wherein R is a linearly saturated hydrocarbon chain having 24 to 32 carbon atoms. Glyceryl trimontanate is formed by esterifying montanic acid with glycerol.

Glyceryl trimontanate has excellent lubricating properties which are displayed upon its addition as an auxiliary agent to the reactive mixture for a synthetic plastic material; the resultant synthetic material is more easily formed such as by extrusion, and has improved shock resistance and transparency.

3,691,220

PROCESS FOR PREPARING OVERBASED ZINC PHOSPHORODITHIOATES

Andrew G. Horodysky, Beaumont, Tex., assignor to Mobil Oil Corporation

Continuation-in-part of Ser. No. 4,399, Jan. 20, 1970, abandoned. This application Dec. 9, 1971, Ser. No. 206,540
Int. Cl. C07f 3/06
U.S. Cl. 260—429.9 8 Claims

Overbased zinc diorganophosphorodithioates are prepared from a diorganophosphorodithioic acid and basic zinc compound in the presence of isopropyl alcohol. The reaction products obtained are used as additives for lubricating oils to impart useful properties thereto.

3,691,221

CO-PRODUCTION OF ALKALI METAL ALUMINUM TETRAALKYLS AND TETRAALKYLLEAD

Paul Kobetz, Baton Rouge, La.; Kenneth L. Lindsay, Baton Rouge, La., and Shirl E. Cook, Baton Rouge, La., assignors to Ethyl Corporation, New York, N.Y.

Filed Nov. 12, 1970, Ser. No. 89,122
Int. Cl. C07f 7/24
U.S. Cl. 260—437 R 19 Claims

A process for the preparation of alkali metal aluminum tetraalkyls by a redistribution reaction between tetraalkyllead compounds and alkali metal aluminum tetraalkyls. Their use as intermediates for the production of triethyl aluminum compounds.

3,691,222

METHOD OF PREPARING SILYL ALCOHOLS

Samuel R. Wendel, Missoula, Mont., assignor to Dow Corning Corporation, Midland, Mich.

Continuation-in-part of Ser. No. 837,296, June 27, 1969, abandoned. This application Feb. 26, 1971, Ser. No. 119,374
Int. Cl. C07f 7/08
U.S. Cl. 260—448 ZE 4 Claims

Silyl alcohols are prepared by reacting alkylene oxides (such as ethylene oxide) with alkoxysilanes or siloxanes containing the group SiRSH in an alcohol promoter and optionally in the presence of acid or base catalysts such as toluene sulfonic acid, zinc chloride or triethylamine. The product has the group SiRSCH(R')CH(R')OH.

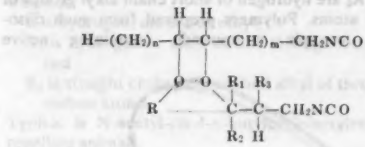
3,691,223

ETHER DIISOCYANATES

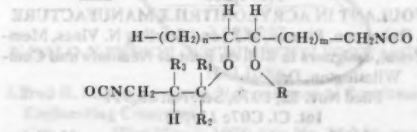
Robert C. Kuder, Excelsior, Minn., and Marwan R. Kamal, Dhahran, Saudi Arabia, assignors to General Mills, Inc.

Filed April 25, 1969, Ser. No. 819,496
Int. Cl. C07c 119/04
U.S. Cl. 260—453 AR 8 Claims

Ether diisocyanates of the formulas:



and



where n is 4 to 19, m is 0 to 15, the sum of n and m is 13 to 19, R_1, R_2 and R_3 are hydrogen or short chain alkyl groups of one to four carbon atoms and R is a monovalent organic radical. Polymers prepared from such diisocyanates and organic compounds containing active hydrogens.

3,691,224

PROCESS FOR THE CONTINUOUS PRODUCTION OF OLEFINICALLY UNSATURATED NITRILES

Giorgio Caporali; Natale Ferlazzo, and Nicola Giordano, all of Milan, Italy, assignors to Montecatini Edison S.P.A., Milan, Italy

Continuation-in-part of Ser. No. 632,635, April 21, 1967, abandoned. This application Aug. 10, 1970, Ser. No. 62,631
Int. Cl. C07c 121/32, 47/22, 45/10
U.S. Cl. 260—465.3 4 Claims

A process for the continuous production of unsaturated aldehydes or unsaturated nitriles by continuously reacting in

vapor phase, at elevated temperature and in the presence of a solid oxidation catalyst, a monoolefin with either oxygen or oxygen together with ammonia, the said reaction being conducted in a reactor provided with at least one cyclone equipped with exhaust means for the recovery of catalyst continuously mechanically conveyed thereto by the continuously reacting gases and the said catalyst being continuously maintained in fluidized state within the said reactor and being continuously separated in the cyclone and continuously recycled to the fluidized bed via the said exhaust means, with the said exhaust means being continuously charged with either oxygen or an oxygen-containing gas, whereby there is formed continuous oxidative catalyst regenerating zone within the reactor.

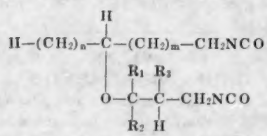
3,691,225

DIISOCYANATES

Marwan R. Kamal, College of Petroleum and Minerals, Dhahran, Saudi Arabia, and Robert C. Kuder, Rt. 6, Box 758, Excelsior, Minn.

Filed April 25, 1969, Ser. No. 819,461
Int. Cl. C07c *119/04*
U.S. Cl. 260—453 AL **8 Claims**

Diisocyanates of the formula:



where n is 5 to 20, m is 0 to 15, the sum of n and m is 14 to 20, and R_1, R_2 and R_3 are hydrogen or short chain alkyl groups of 1 to 4 carbon atoms. Polymers prepared from such diisocyanates and organic compounds containing active hydrogens.

3,691,226

ANTI-FOULANT IN ACRYLONITRILE MANUFACTURE

David O. Halverson, Pitman, N.J., and Sterling N. Vines, Memphis, Tenn., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 12, 1970, Ser. No. 88,991
Int. Cl. C07c *121/32*
U.S. Cl. 260—465.9 **11 Claims**

Lignosulfonate metal salts are added to the water used to absorb acrylonitrile to minimize deposits which otherwise foul the heat transfer surfaces of the heat exchangers used to cool the water before recycling it to the system.

3,691,227

ANILINOMETHYLENEMALONITRILES

Joseph W. Baker, Kirkwood, and Robert K. Howe, Bridgeton, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 681,578, Nov. 8, 1967, Pat. No. 3,551,573. This application Dec. 9, 1969, Ser. No. 886,593
Int. Cl. C07c *121/78*
U.S. Cl. 260—465 E **10 Claims**

Trifluoromethylanilinomethylenemalonitriles having insecticidal properties

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3,691,228

PROCESS FOR THE PREPARATION OF HALOHYDRIN ESTERS

Hiroshi Maeda; Koichi Hasegawa; Hisashi Sekiguchi, and Fumio Hayakawa, all of Chiba, Japan, assignors to Dainippon Ink and Chemicals, Incorporated, Tokyo, Japan

Filed Jan. 12, 1970, Ser. No. 2,419
Claims priority, application Japan, Jan. 14, 1969, 44/2380
Int. Cl. C07c *69/62, 69/74, 69/80*
U.S. Cl. 260—468 R **2 Claims**

A process for the preparation of halohydrin esters which comprises reacting a carboxylic anhydride with an epoxy halogen compound in the presence of water and a tertiary alcohol.

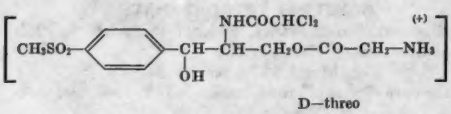
3,691,229

PROCESS FOR THE PREPARATION OF THIAMPHENICOL GLYCINATE ACETYLCYSTEINATE

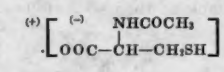
Davide Della Bella, Milan; Mario Portelli, Vicenza, and Giorgio Renzi, Bresso, all of Italy, assignors to Zambon S.p.A., Bresso, Milan, Italy

Filed June 8, 1970, Ser. No. 44,614
Claims priority, application Italy, June 7, 1969, 17866 A/69
Int. Cl. C07c *149/20*
U.S. Cl. 260—481 R **1 Claim**

A process for the preparation of thiamphenicol glycinate acetyl-cysteinate with the formula:



D—threo



(I)

in which thiamphenicol glycinate hydrochloride is made to react with a stoichiometric quantity of dicyclohexylamine in dimethylformamide, the stoichiometric quantity of acetylcysteine is added to the solution filtered from the precipitated dicyclohexylammonium hydrochloride and the thiamphenicol glycinate acetylcysteinate formed is separated by precipitation with a precipitation agent selected from the group consisting of chloroform and ethyl ether.

3,691,230

PROCESS FOR PRODUCING CARBOXYLIC ACIDS AND ESTERS

Johannes A. Wesselingh, Amsterdam, Netherlands, assignor to Shell Oil Company, New York, N.Y.

Filed May 28, 1970, Ser. No. 41,462
Claims priority, application Netherlands, July 10, 1969, 6910591
Int. Cl. C07c *51/14*
U.S. Cl. 260—497 R **8 Claims**

A method and apparatus for controlling the quantity of gas in a stream of liquid by circulating the stream of liquid within a vessel and introducing the gas into the vessel into contact with the stream of liquid both above and below the surface of the stream of liquid. The quantity of the gas present in the circulating stream of liquid is controlled by selectively adjusting either the velocity of the stream of liquid within the vessel or the depth of the introduction of the gas into the vessel below the surface of the stream of liquid.

3,691,231

NEW PROCESS FOR THE PREPARATION OF 1-INDANCARBOXYLIC ACIDS

Bernard R. Belleau, Westmount, and Gerry Kavadias, St. Lambert, Quebec, both of Canada, assignors to Bristol-Myers Company, New York, N.Y.

Filed Dec. 13, 1971, Ser. No. 207,625
Int. Cl. C07c *63/00*
U.S. Cl. 260—523 R 6 Claims

Levorotatory 5-cyclohexyl-1-indancarboxylic acid is a useful anti-inflammatory agent in the treatment of inflammatory diseases in animals, including man. As such, a new and more efficient process has been discovered for the preparation of large quantities of the racemic mixture of the compound, (±)-5-cyclohexyl-1-indancarboxylic acid.

3,691,232

PROCESS FOR PRODUCING OXALIC ACID

Eiichi Yonemitsu, Kashiwa-shi; Tomiya Isshiki, Tokyo; Tsuyoshi Suzuki, Matsudo-shi, and Akihiko Sanada, Tokyo, all of Japan, assignors to Mitsubishi Edogawa Kagaku Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 4, 1969, Ser. No. 847,222
Claims priority, application Japan, Aug. 7, 1968, 43/55526
Int. Cl. C07c *51/32*
U.S. Cl. 260—531 R 2 Claims

Oxalic acid is produced at high yield by the oxidation of ethylene glycol with an acid mixture comprising 2–60 wt percent nitric acid 20–78 wt percent sulfuric acid and 20–50 wt percent water. The molar ratio of nitric acid/ethylene glycol should not be less than 3/1.

3,691,233

PROCESS FOR PRODUCING ORGANIC ACIDS

Alan F. Ellis, Murrysville, and Richard Seekircher, Cheswick, both of Pa., assignors to Gulf Research & Development Company

Filed Jan. 13, 1971, Ser. No. 106,286
Int. Cl. C07c *51/00, 51/32*
U.S. Cl. 260—533 R 14 Claims

An improvement in a process for converting an unsaturated, acyclic hydrocarbon to a carboxylic acid in which the unsaturated, acyclic hydrocarbon is reacted with oxygen containing a small amount of ozone at a low temperature to obtain an intermediate product in a first stage and the intermediate product is oxidized in a second stage with molecular oxygen at a higher temperature to obtain the desired carboxylic acid, which involves employing a solvent mixture comprising a major amount of a carboxylic acid solvent having a boiling point as high or higher than the highest boiling point of a carboxylic acid formed during the reaction and a minor amount of lower carboxylic acid solvent or a lower alcohol solvent, whereby fogging during the first stage of the process is reduced.

3,691,234

N-ACYLATED CYCLOALKYLHYDROXYLAMINES

Hans Kiefer, Wachenheim, and Adolf Fischer, Mutterstadt, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed June 16, 1970, Ser. No. 46,834
Claims priority, application Germany, June 20, 1969, P 19 31 386.1
Int. Cl. C07c *125/00, 135/00*
U.S. Cl. 260—545 R 2 Claims

New and valuable N-acylated cyclo-alkylhydroxylamines having a strong herbicidal action, and a process for controlling the growth of unwanted plants with these compounds.

3,691,235

PREPARATION OF N-SUBSTITUTED 2-AMINOPHENYL ARYL KETONE

Ronald J. McCaully, Malvern, and Stanley C. Bell, Philadelphia, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 395,807, Sept. 11, 1964, abandoned. This application June 29, 1965, Ser. No. 468,030
Int. Cl. C07c *135/00*
U.S. Cl. 260—545 R 2 Claims

A process for preparing intermediates useful in the preparation of diazepam and oxazepam type psycoleptic 1,4-benzodiazepines is described, which involves replacing in hydroxyaminoacetic acid, the hydrogen of the hydroxyl group attached to nitrogen and the hydrogen directly attached to nitrogen with acetyl groups, replacing the hydroxyl group attached to the carbonyl carbon with chlorine, and condensing the product with a 2-aminobenzophenone.

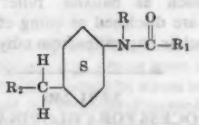
3,691,236

N-ACYLCYCLOHEXYLAMINES

Richard N. Knowles, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 574,276, Aug. 18, 1966, abandoned. This application April 20, 1967, Ser. No. 635,306
Int. Cl. C07c *103/12*
U.S. Cl. 260—561 R 9 Claims

N-Acylcyclohexylamines of the formula:



wherein
R is hydrogen, methyl or ethyl;
R_1 is hydrogen or alkyl of one through four carbon atoms; and
R_2 is straight chain or branched alkyl of three through eight carbon atoms.
Typical is N-acetyl-cis-4-n-butylcyclohexylamine useful for repelling animals.

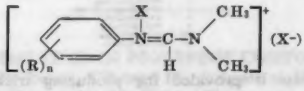
3,691,237

N-HALO-N-PHENYL-N'N'DIMETHYLFORMAMIDINIUM HALIDES

Alfred H. Miller, Somerset, N.J., assignor to Esso Research and Engineering Company

Filed May 6, 1970, Ser. No. 35,226
Int. Cl. C07c *123/00*
U.S. Cl. 260—564 R 9 Claims

N-Halo-N-Phenyl-N'N'dimethylformamidinium halides characterized by the following structural formula:



wherein R is selected from the group consisting of hydrogen, C_1–C_6 alkoxy, C_1–C_6 alkylthio, C_1–C_6 alkyl, bromine and chlorine; *n* is an integer ranging from 1 to 4; X is one selected from the group consisting of bromine and chlorine. These compounds possess pesticidal activity and show especially good fungicidal activity.

3,691,238

PROCESS FOR THE TREATING CRUDE ALKYLATED PHENOLS

Efim Biller, Fribourg, Switzerland; Rudolf Huettner, Cologne Raderberg, and Gunter Velling, Hersel near Bonn, both of Germany, assignors to Union Rheinische Braunkohlen Kraftstaff Aktiengesellschaft, Wesseling near Cologne, Germany

Filed Sept. 29, 1967, Ser. No. 671,552
Int. Cl. C07c *37/22*
U.S. Cl. 260—621 A 5 Claims

A process for the recovery of alkyl phenols from their reaction mixtures by treating said reaction mixtures with an inert water-insoluble organic solvent, separating the resulting aqueous catalyst containing layer from the organic layer, passing the organic layer along with water over zinc carbonate, separating the resulting aqueous layer from the organic layer, washing the organic layer with water, separating the aqueous layer from the organic layer and distilling pure alkyl phenol from the organic layer.

3,691,239

PROCESS FOR PURIFICATION OF ETHYLENE DICHLORIDE

Homer L. Hackett, Ponca City, Okla., and Edmond A. Peveto, Westlake, La., assignors to Continental Oil Company, Ponca City, Okla.

Filed May 5, 1969, Ser. No. 822,020
Int. Cl. C07c *19/02*
U.S. Cl. 260—652 P 5 Claims

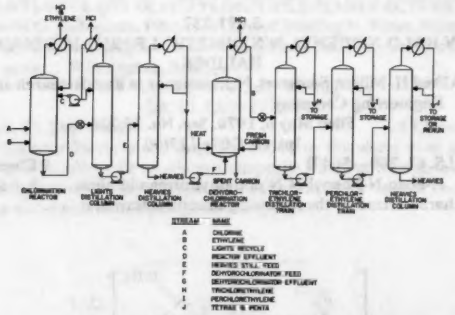
Adsorbents such as bauxite, fuller's earth, activated bentonite, etc., are disclosed as being effective in removing metal salts and acidic impurities from ethylene dichloride.

3,691,240

PROCESS FOR CHLORINATION, DEHYDROCHLORINATION AND PURIFICATION OF ORGANIC COMPOUNDS

Charles E. Kircher, Jr., Detroit; Donald R. McAlister, Livonia, both of Mich., and Doris LeRoy Brothers, Mason, Ohio, assignors to Detrex Chemical Industries, Inc., Detroit, Mich.

Continuation of Ser. No. 638,468, May 15, 1967, abandoned, which is a continuation-in-part of Ser. Nos. 587,259, Oct. 17, 1966, abandoned, and Ser. No. 565,095, July 14, 1966, Pat. No. 3,631,207. This application Oct. 6, 1969, Ser. No. 866,097
Int. Cl. C07c *21/00*
U.S. Cl. 260—654 D 8 Claims



A process is provided for producing trichlorethylene, tetrachlorethylene or mixtures thereof including the steps of (1) reacting chlorine and ethylene in a liquid body containing predominantly chlorethanes, which chlorethanes have an average composition of at least 2.5 chlorine atoms per molecule; (2) maintaining the chlorethanes at a temperature in the range of 0° to 250° C.; (3) removing at least a portion of said chlorethanes and separating said removed material into a heavier product fraction containing a predominant amount of chlorethane having at least four chlorine atoms per molecule and a lighter fraction having an average chlorine content which is lower than that of said first fraction, the ratio of the number of mols of the heavier fraction to the number of mols of the lighter fraction being in the range of 1:0.1 to 1:30; (4) employing at least a portion of the said lighter fraction as liquid body in a subsequent chlorination reaction in accordance with steps (1), (2) and (3); and (5) dehydrochlorinating the heavier product fraction of step (3) by (6) maintaining the heavier product fraction at an elevated temperature in the liquid state while under positive pressure and in the presence of activated carbon.

3,691,241

PREPARATION OF POLYMERS AND TELOMERS USING COMPLEXES OF ORGANOMAGNESIUMS WITH CERTAIN HYDRIDES AS CATALYSTS

Conrad W. Kamienski, and Joseph H. Merkley, both of Gastonia, N.C., assignors to Lithium Corporation of America, New York, N.Y.

Filed Aug. 24, 1970, Ser. No. 66,563
Int. Cl. C07c *15/06*
U.S. Cl. 260—668 B 9 Claims

Preparation of polymers of conjugated dienes, such as those of 1,3-butadiene; and of telomers, such as those of benzene or toluene with 1,3-butadiene; utilizing, as a catalyst, complexes of organomagnesiums with (i) alkali metal hydrides or (ii) tetraalkylammonium hydrides, as, for example, complexes of di-sec-butylmagnesiums with potassium hydride or tetramethylammonium chloride.

3,691,242

METHOD OF PRODUCING T-ALKYLBENZENE

Tai Chun Cheng, 3663 Louise St., Mogadore, Ohio, and Adel F. Halasa, 5040 Everett Rd., P.O. Box 244, Bath, Ohio

Filed March 25, 1971, Ser. No. 127,984
Int. Cl. C07c *3/52*
U.S. Cl. 260—668 B 5 Claims

t-Amylbenzene and 2,3-dimethyl-2-phenyl butane are made by reacting cumene with ethylene or propylene under mild reaction conditions. The reaction is catalyzed by using an alkali metal and an alkali metal alkoxide.

3,691,243

ARYLATION OF OLEFINS

Ellis K. Fields, River Forest, and Allen I. Feinstein, Wheaton, both of Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed Aug. 14, 1970, Ser. No. 63,928
Int. Cl. C07c *15/10*
U.S. Cl. 260—669 R 1 Claim

Reactions of nitro-aromatic compounds with olefins and diolefins is disclosed. When a nitro-aromatic is reacted with an olefin, the product is a vinyl-aromatic; for example, nitrobenzene and ethylene yields styrene. When a nitro-aromatic is reacted with a diolefin, the product is a fused ring, polycyclic aromatic; for example, nitrobenzene and butadiene yields naphthalene.

3,691,244

MANUFACTURE OF 1-METHYL-3-PHENYLINDANES

Waldemar Koehler, 7 An der Froschlache, and Hans-Georg Schecker, 6 Obersternstrasse, both of 6700 Ludwigshafen, Germany

Filed Nov. 25, 1970, Ser. No. 92,948
Claims priority, application Germany, Nov. 28, 1969, P 19 59 707.0; July 10, 1970, P 20 34 243.2; July 10, 1970, P 20 34 244.3; July 11, 1970, P 20 34 531.7
Int. Cl. C07c *15/06*
U.S. Cl. 260—668 F 16 Claims

Manufacture of 1-methyl-3-phenylindanes by reacting gaseous styrene or 1,3-diphenylbutenes-1 in the presence of acids.

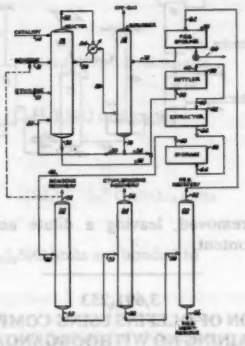
The compounds produced by the process of the invention are valuable intermediates in the manufacture of dyes and pesticides.

3,691,245

PRODUCTION OF ETHYLBENZENE

Albert E. Helzner, Marblehead, Mass., assignor to The Badger Company, Inc., Cambridge, Mass.

Filed Sept. 18, 1970, Ser. No. 73,341
Int. Cl. C07c 3/52
U.S. Cl. 260—671 R 5 Claims



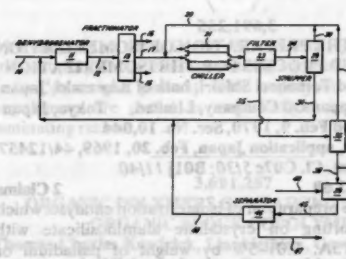
Benzene is efficiently recovered and the alkylating process is made to run more efficiently to produce ethylbenzene in the process of alkylating benzene with dilute ethylene by recirculating a large volume of polyethylbenzene to efficiently recover the benzene in the off-gases, splitting the benzene-rich polyethylbenzene scrubber effluent, returning a small approximate reaction equilibrium quantity of polyethylbenzene to the reactor, and then processing both the remaining benzene-rich scrubber effluent together with the total reactor effluent to recover benzene, ethylbenzene and residual polyethylbenzene.

3,691,246

OLEFIN SEPARATION PROCESS

Levi Christy Parker; Thomas Allen Cooper, and James Lawson Meadows, all of Port Arthur, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 28, 1970, Ser. No. 101,889
Int. Cl. C07c 3/52, 11/02
U.S. Cl. 260—671 R 10 Claims



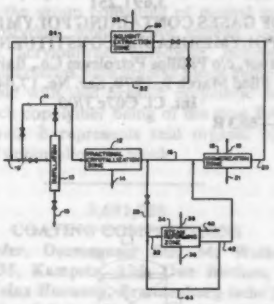
A mixture of olefins and n-paraffins is produced by cracking or dehydrogenation of n-paraffins. Separation of an olefin fraction from the mixture of olefins and normal paraffins is effected by forming a solution of said mixture in a selective solvent, cooling said solution to a temperature at which substantially all of said olefins remain in solution in said solvent whereby normal paraffins are precipitated from the remaining solution. The remaining solution of enriched olefin content is separated from precipitated normal paraffins and solvent and to said olefin fractions are separated from the normal paraffin denuded liquid. The separated olefin fraction is suitable for reaction with an aromatic such as benzene in the manufacture of alkyl benzene compounds.

3,691,247

SELECTIVELY REMOVING MONOALKYLBENZENES FROM MIXTURES THEREOF WITH DIALKYLBENZENES

William G. Billings, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Sept. 28, 1970, Ser. No. 76,074
Int. Cl. C07c 7/02, 3/58
U.S. Cl. 260—674 A 20 Claims



Monoalkylbenzenes, e.g., ethylbenzene, contained in a mixture with dialkylbenzenes, e.g., one or more xylenes, are selectively removed from said mixture by steam reforming the mixture so as to convert the monoalkylbenzene to lower boiling materials, e.g., benzene and/or toluene, which can be readily removed from the mixture.

3,691,248

SELECTIVE HYDROGENATION OF ACETYLENES

Lawrence R. Ffrench, and Wilson M. Skinner, both of Baytown, Tex., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Jan. 22, 1971, Ser. No. 109,037
Int. Cl. C07c 11/00
U.S. Cl. 260—677 H 5 Claims

Acetylenes are selectively hydrogenated from the gaseous product from the pyrolysis of substantially sulfur free light hydrocarbons such as ethane and propane. The pyrolysis gas comprises ethylene, butadiene and the acetylenes. The selective hydrogenation occurs by the addition of liquid carbon disulfide into the gas stream in an amount to provide between 5 and 20 parts per million of sulfur in the hydrogenation zone. A catalyst comprising nickel, for example, a nickel-cobalt-chromium sulfide supported catalyst, is employed and the acetylene content of the product is reduced to a level of about 30 to 200 ppm. An ethylene stream can be separated and the acetylene content further reduced in a secondary hydrogenation zone using any suitable hydrogenation catalyst.

3,691,249

DIMERIZATION OF DIOLEFINIC COMPOUNDS

Edwin L. De Young, Chicago, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Oct. 7, 1970, Ser. No. 78,951
Int. Cl. C07c 11/24
U.S. Cl. 260—677 R 9 Claims

Conjugated diolefinic hydrocarbons are dimerized in the presence of certain organopalladium complex catalytic compositions of matter at dimerization conditions to produce a selective dimer of a starting material.

3,691,250

2-METHYL-3-METHYLENE-1,5,7-OCTATRIENE, ITS OLIGOMETER, AND ITS PREPARATION FROM ALLENE AND BUTADIENE WITH PALLADIUM(O) CATALYSTS

Dale Robert Coulson, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed March 9, 1971, Ser. No. 122,537
Int. Cl. C07c *11/02*
U.S. Cl. 260—677 R 5 Claims

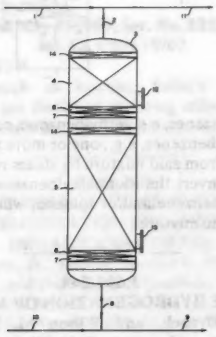
The tetraene 2-methyl-3-methylene-1,5,7-octatriene in both cis and trans forms is obtained by liquid-phase reaction between allene and butadiene in the presence of a Pd(O) complex catalyst. The tetraene readily forms an oligomer useful as a vehicle in air-dried finishes.

3,691,251

DRYING OF GASES CONTAINING POLYMERS AND/OR POLYMERIZABLE CONSTITUENTS

Robert D. Bauer, c/o Phillips Petroleum Co., Bartlesville, Okla.

Filed March 9, 1970, Ser. No. 17,449
Int. Cl. C07c *3/00*
U.S. Cl. 260—683 R 8 Claims



A cracked gas, for example as derived from the cracking of ethane under conditions to produce an ethylene gas containing effluent also containing polymers and/or polymerizable constituents, is passed successively through a relatively cheap absorbent or drying material and then through a molecular sieve desiccant. The polymers or polymer-forming constituents are removed from the cracked gases, albeit they are contained therein in very small amount of the order of parts per million. During regeneration of the expensive desiccant bed, the relatively cheap material is discarded as required.

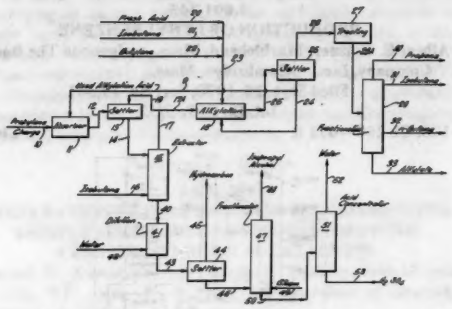
3,691,252

REDUCTION OF HYDROCARBON CONTENT OF SPENT ACID FROM SULFURIC ACID RECOVERY

Arthur R. Goldsby, Chappaqua, N.Y., assignor to Texaco Development Corporation, New York, N.Y.

Continuation of Ser. No. 740,586, June 27, 1968, abandoned, Pat. No. 3,462,512. This application June 15, 1970, Ser. No. 48,893
Int. Cl. C07c *3/54*; C01b *17/88*, *17/90*
U.S. Cl. 260—683.62 7 Claims

Method for reducing hydrocarbon content of spent sulfuric acid obtained by absorbing olefin in used sulfuric acid catalyst, reacting with olefins to form dialkyl sulfates and extracting dialkyl sulfates with isobutane; the resulting spent sulfuric acid is diluted with water to free polymeric oil and to hydrolyze alkyl sulfates to alcohols; and the polymeric oil and



alcohols are removed, leaving a dilute acid of reduced hydrocarbon content.

3,691,253

CONVERSION OF OLEFINS USING COMPLEXES OF V OR N CONTAINING NO WITHOORGANOALUMINUMS

William B. Hughes, and Ernest A. Zuech, both of c/o Phillips Petroleum Co., Bartlesville, Okla.

Division of Ser. No. 694,875, Jan. 2, 1968, Pat. No. 3,562,178, Continuation-in-part of Ser. No. 635,656, May 3, 1967, abandoned. This application Oct. 12, 1970, Ser. No. 80,230
Int. Cl. C07c *3/62*
U.S. Cl. 260—683 D 10 Claims

A process for the conversion of olefinic hydrocarbons according to the olefin reaction including olefin disproportionation by contacting the olefinic hydrocarbon with a catalyst comprising a compound of vanadium or niobium complexed with NO and a selected complexing agent (e.g., benzoic acid) and combined with an organoaluminum compound (e.g., methylaluminum sesqui-chloride). The metal complexes which form a part of the catalysts are also claimed.

3,691,254

Patent Not Issued For This Number

3,691,255

METHOD FOR THE PREPARATION OF ISOMERIZATION CATALYST AND PROCESS FOR THE ISOMERIZATION

Shinji Takase, and Tomonori Shioiri, both of Kawasaki, Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

Filed Feb. 9, 1970, Ser. No. 10,044
Claims priority, application Japan, Feb. 20, 1969, 44/12457
Int. Cl. C07c *5/30*; B01j *11/40*
U.S. Cl. 260—683.68 2 Claims

Method for the preparation of isomerization catalysts which comprises supporting on crystalline aluminosilicate with openings of 6–15A. 0.01–5% by weight of palladium or platinum as calculated in terms of the metal by a conventional procedure and then contacting the alumino-silicate with one or more halogenated hydrocarbons wherein the halogen is fluorine and/or chlorine at a temperature from 0° to 350°C. to make a halogen content of 0.01–20 percent by weight, and process for the isomerization of hydrocarbons which comprises contacting straight or less branched hydrocarbons with said catalyst at a temperature from 15° to 400°C. in the presence of a hydrogen-containing gas to produce more highly branched hydrocarbons.

3,691,256
ACETOXY FUNCTIONAL COPOLYMER COMPOSED OF MONOMETHYLSILOXANE UNITS AND DIPHENYLSILOXANE UNITS

Robert C. Antonen, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 802,196, Feb. 25, 1969, Pat. No. 3,632,793. This application Oct. 27, 1970, Ser. No. 84,487

Int. Cl. C08g 47/02, 31/12, 31/32

U.S. Cl. 260—825 5 Claims

Acetoxymonomethylsiloxane-diphenylsiloxane copolymers of

$(CH_3)(CH_3\overset{O}{\overset{\|}{C}}O)SiO$ units

$CH_3SiO_{1.5}$ units, $(C_6H_5)_2SiO$ units and

$(CH_3)(CH_3\overset{O}{\overset{\|}{C}}O)_2SiO_{0.5}$ units

where the $(C_6H_5)_2SiO$ units are bonded to

$(CH_3)(CH_3\overset{O}{\overset{\|}{C}}O)SiO$ units

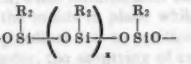
$CH_3SiO_{1.5}$ units or

$(CH_3)(CH_3\overset{O}{\overset{\|}{C}}O)_2SiO_{0.5}$ units

15 to 46 weight percent of the copolymer is

$CH_3\overset{O}{\overset{\|}{C}}O$

and 20 to 50 mol percent of the siloxane units are $(C_6H_5)_2SiO$ units is disclosed. Also disclosed are modified acetoxymonomethylsiloxane-diphenylsiloxane copolymers wherein molecules of the copolymer are linked together by segments of the formula



wherein x is at least 2 and R is methyl, phenyl or 3,3,3-trifluoropropyl and the segments being present in amounts of 1 to 50 weight percent. The copolymers and modified copolymers are useful as cross-linkers, intermediates and laminating resins.

3,691,257
ORGANIC POLYMERS CONTAINING SILOXANE-ORGANIC BLOCK COPOLYMERS

Thomas Charles Kendrick, Llanblethian, Cowbridge, Glamorgan, and Michael James Owen, Llandough, Penarth, Glamorgan, both of Wales, assignors to Midland Silicones Limited, Reading, England

Filed March 18, 1969, Ser. No. 808,355

Claims priority, application Great Britain, March 29, 1968, 15,281/68

Int. Cl. C08g 47/10; C08f 29/12, 33/08

U.S. Cl. 260—827 17 Claims

A composition comprising (1) an organic polymeric material selected from the group consisting of polyolefins, polyethylene terephthalate, polyvinyl chloride, polyvinylidene chloride, polystyrene, polymethyl methacrylate, natural rubber, polyisoprene, butadiene-styrene copolymer, chloroprene polymers, isobutylene polymers, acrylic resins, epoxy resins, polyamides, butadiene-acrylonitrile copolymers, melamine-formaldehyde resins, phenol-formaldehyde resins, and urea-formaldehyde resins; and (2) from 0.001 to 10 percent by weight based on the weight of said organic polymeric material of a linear block copolymer comprising at least one organosiloxane block (A) containing at least 20 units of the formula R_2SiO— wherein each R is selected from the group consisting of hydrogen atoms, monovalent hydrocarbon radicals, monovalent halogen-substituted hydrocarbon radicals and amino alkyl radicals and at least some of the R groups in said organosiloxane block are not hydrogen; and an organic block (B) selected from the group consisting of polymers formed by the polymerization of at least one compound selected from the group consisting of methyl methacrylate, styrene, chlorostyrene, alpha methyl styrene, vinyl chloride, vinyl pyridine, acrylonitrile, butadiene, isoprene, epsilon-caprolactum, and olefins, said organic block being at least partially compatible with said organic polymeric material; and said linear block copolymer being of the type BAB or of the type AB wherein B represents said organic block and A represents said organosiloxane block.

3,691,258
COATING COMPOSITIONS

Franz Riemhofer, Dormagener Str. 34; Walter Dittman, Kampstr. 135, Kampstr. 135; Uwe Biethan, Lipperweg. 197; Karl-Heinz Hornung, Brandenburg ische Str. 15, and Ernst-Christian Schutze, Kampstr. 129, all of 4370 Marl, Germany

Filed Oct. 23, 1969, Ser. No. 868,910

Claims priority, application Germany, Oct. 25, 1968, P 18 05 187.1; Oct. 25, 1968, P 18 05 188.2; Oct. 25, 1968, P 18 05 195.1

Int. Cl. C08g 37/34

U.S. Cl. 260—850 21 Claims

Coating compositions resistant to yellowing, solvents, acids and alkalies and having the combination of high elasticity and good hardness are produced by using a mixture of

a. an aminoplast and

b. a polyester having an average weight molecular weight of 600–3,000 of

I. an alcohol mixture which contains an aliphatic polyol having 3-4 hydroxy groups and three to six carbon atoms and a mixture which includes one or both of ethylene glycol and 1,2-propanediol, and

II. an acid mixture which consists essentially of 91–33 percent of a cyclic dicarboxylic acid and 9–67 percent of an acylic dicarboxylic acid.

3,691,259
Patent Not Issued For This Number

3,691,260
IMPACT RESISTANT THERMOPLASTIC COMPOSITION

Hans Mittnacht, 2 Rheinparkstrasse, 6800 Mannheim, and Edmund Priebe, 22 Brunckstrasse, 6710 Frankenthal, both of Germany

Filed Feb. 25, 1970, Ser. No. 14,247

Claims priority, application Germany, March 8, 1969, P 19 11 882.2

Int. Cl. C08f 41/12, 45/24, 19/18

U.S. Cl. 260—876 R 3 Claims

Impact-resistant thermoplastic molding composition comprising a mixture of a styrene-acrylonitrile copolymer and a styrene-acrylonitrile graft copolymer on polyacrylate backbone polymer latices. Backbone polymer latices are used

which have an average particle diameter between 0.15 and 0.8 μ and a narrow particle size distribution. The molding compositions can be used to make heavy duty utility articles which are resistant to the action of air and light.

3,691,261

GRAFT COPOLYMER WITH AN ALKYL ACRYLATE AND ETHYLTHIAETHYL METHARYLATE BACKBONE

Carmen M. Cusano, Poughkeepsie; Roy I. Yamamoto, and Isaac D. Rubin, both of Wappingers Falls, all of N.Y., assignors to Texaco, Inc., New York, N.Y.

Filed March 1, 1971, Ser. No. 120,069
Int. Cl. C08f 15/40, 19/10
U.S. Cl. 260—881 2 Claims

A thermoplastic terpolymer resin composition of improved resistance to ultraviolet light deterioration consisting essentially of a rubbery copolymer backbone of a C_2 to C_{18} alkyl acrylate and a first member of ethylthioethyl methacrylate having grafted thereon a graft copolymer of acrylonitrile and styrene member, said terpolymer composed of between about 15 and 35 weight percent of said rubbery backbone and between 65 and 85 weight percent of said graft copolymer, said rubbery backbone component having a first weight ratio of said alkyl acrylate to said first member of between about 99:1 and 99:10 and said graft copolymer component having a weight ratio of said acrylonitrile to said styrene member of between about 15:85 and 30:70, said styrene member selected from the group consisting of styrene and between about 1:0 and 1:1 weight mixture of styrene to α-methylstyrene, said terpolymer composition formed by the method consisting essentially of first polymerizing a mixture of said alkyl acrylate and said member under aqueous emulsion polymerization conditions in the presence of polymerization initiator, polymerization modifier and first anionic emulsifier to form an aqueous latex containing a copolymer of acrylate and said member, said first polymerization being conducted at a pH between about 2 and 7 at a first temperature between about 110° and 150° F. under conditions of vigorous agitation thereby forming the rubbery copolymer of alkyl acrylate and first member, then second polymerizing under aqueous emulsion conditions said formed alkyl acrylate-first member copolymer with a mixture of acrylonitrile and styrene member in the presence of polymerization initiator, polymerization modifier and a second anionic emulsifier, said second polymerization being conducted at a pH of between 2 and 7 at a second temperature between about 110° and 150° F. under vigorous agitation conditions until said terpolymer composition is formed.

3,691,262

FIRE-RETARDANT BROMINATED ABS POLYMERS AND METHOD OF PREPARATION

Edward M. Hagerman, Royal Oak, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 13, 1970, Ser. No. 89,464
Int. Cl. C08f 41/12
U.S. Cl. 260—890 5 Claims

When an acrylonitrile-butadiene-styrene (ABS) latex is treated with elemental bromine the resin is simultaneously brominated, and coagulated and precipitated from the latex. When the isolated, brominated resin is mixed with a small amount of synergistic flame-retardant additive, such as antimony oxide, a nonburning ABS resin having good physical properties is produced.

ERRATA

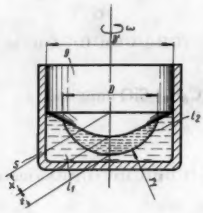
For Clases 260—961 thru 260—942 see:
Patents Nos. 3,691,275 thru 3,691,278

3,691,263

METHOD FOR MANUFACTURING ROTATION-SYMMETRIC ARTICLES BY CENTRIFUGAL CASTING

Vladimir Stoy; Miroslav Stol; Helena Prokopova, and Karel Kliment, all of Prague, Czechoslovakia, assignors to Ceskoslovenska akademie red, Prague, Czechoslovakia

Filed Jan. 19, 1970, Ser. No. 3,908
Claims priority, application Czechoslovakia, Jan. 20, 1969, 366-69
Int. Cl. B29d 11/00
U.S. Cl. 264—1 8 Claims



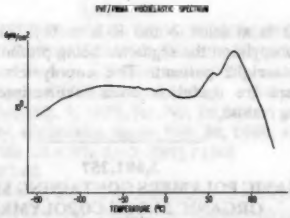
The invention concerns centrifugal casting of articles which solidify either by a chemical reaction or by physical solidification, wherein a cast liquid is brought into contact only with at least one shaping liquid, or, if desired, also with a gas phase, at least one of the shaping liquids being specifically heavier and the other shaping liquid or liquids being specifically lighter than the cast liquid, all the liquids forming a sharp boundary with each other. Thus, any contact of the cast liquid with a solid phase such as with the wall of the rotating container is excluded and the cast article is shaped only by centrifugal force, gravity and surface tension.

3,691,264

PROCESS FOR PRODUCING STABLE ELECTRET CONSISTING OF A CRYSTALLINE HIGH MOLECULAR WEIGHT MATERIAL

Mitsuo Asahina, Tokyo, Japan, assignor to Kureha Kagoku Kogko Kabushiki Kaisha, Tokyo, Japan

Filed July 16, 1970, Ser. No. 55,548
Claims priority, application Japan, July 17, 1969, 44/56614
Int. Cl. B29c 25/00
U.S. Cl. 264—22 1 Claim



A process for producing a crystalline high molecular weight material electret which comprises melting and molding a crystalline high molecular weight material, quenching said high molecular weight material to a temperature lower than the crystal dispersion temperature of the high molecular weight material and then applying a direct current field to the quenched material at temperatures between the crystal dispersion temperature and the melting point of the material is disclosed.

3,691,265
PREPARATION OF VINYL-COATED POLYURETHANE FOAMS

David S. Cobbledick, Kent, Ohio, assignor to The General Tire & Rubber Company

Continuation-in-part of Ser. No. 783,402, Dec. 12, 1968, Pat. No. 3,586,649. This application Aug. 31, 1970, Ser. No. 68,559

Int. Cl. B29d *27/04*; C08g *22/46*, *53/08*

U.S. Cl. 264—45 4 Claims

Certain combinations of polyurethane foam ingredients which react essentially at room temperature are mixed and poured into vacuum-formed polyvinyl sheeting and allowed to cure thereby producing a polyurethane foam with a strongly adherent polyvinyl coating.

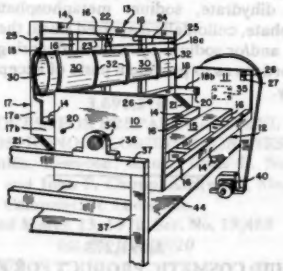
3,691,266
SUPPORTING CARRIAGE FOR, AND METHOD OF CASTING IN, MOLDS FOR THE PRODUCTION OF CERAMIC HOLLOW WARE

Jerome S. Greenberg, Chicago, Ill., assignor to Regal China Corporation, Antioch, Ill.

Filed Dec. 8, 1970, Ser. No. 96,140

Int. Cl. B28b *1/26*

U.S. Cl. 264—86 3 Claims



A rotatable carriage for supporting split-type plaster molds used in the casting of ceramic hollow ware comprises two end frames and two normally oppositely facing supporting frames, one of the supporting frames being fixed to the end frames and the other supporting frame being pivotally mounted on the end frames to permit loading and unloading of the molds. The pivotally mounted supporting frame has an inflatable member on its inner face which, when inflated after the frame is locked in position, secures the molds in place while the carriage is rotated about its longitudinal axis to positions permitting the filling of the mold cavity, the emptying of excess casting slip from the mold cavity and the returning of the molds to a horizontal opening position. By handling the molds in this manner during filling, casting and emptying, a new casting method is obtained.

3,691,267
SANITARY PROCESS OF PACKING A SUBJECT INTO A VESSEL

Hiraki Takehara, Nigawa-cho 3-chome 40, 662 Hyogo-ken, Nishinomiya, Japan

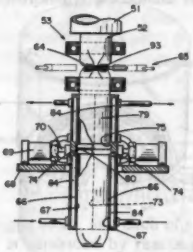
Filed Sept. 15, 1969, Ser. No. 857,772

Claims priority, application Japan, Sept. 25, 1968, 43/69693; Sept. 26, 1968, 43/69931; Sept. 26, 1968, 43/69932; Dec. 27, 1968, 44/458

Int. Cl. B29c *17/07*; B65b *3/06*

U.S. Cl. 264—98 2 Claims

The present invention relates to a sanitary process of packing a subject into a vessel which comprises the steps of producing combined vessels each having vessels whose peripheral side walls at mouth portions we facing to each other and are continuously joined with each other, the said combined vessels having inner spaces in communication with each other only through passages within the side walls at mouth portions and each of the combined vessels being so formed that when it is separated at the junction of the peripheral side walls at mouth portions the openings thus formed by separation serve as mouths of the vessels, the walls of vessels other than the mouth portions being perfectly closed; separating the combined vessels at the junction of the peripheral side walls before charging an object into vessels to obtain separated vessels; charging a subject into the separated vessels as they are or into vessels formed by modifying the separated vessels as desired; and sealing the mouths of vessels. The vessels, until they are severed from combined vessels just before use, can be retained with great case and high reliability in sanitary, clean condition free from germs or foreign matters. In spite of these advantages, the present invention can almost eliminate waste of material throughout the entire process starting with the feeding of materials and terminating with the production of vessels ready for use.



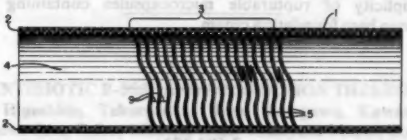
3,691,268
METHOD OF MAKING A FLEXIBLE MEMBER HAVING INCREASED SERVICE LIFE

Thomas E. Burkley, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 679,731, Nov. 1, 1967, Pat. No. 3,598,155. This application March 23, 1970, Ser. No. 24,931

Int. Cl. B29c *1/02*; B29h *21/08*

U.S. Cl. 264—162 12 Claims



A method of making a flexible member having increased service life with the member being of the type designed for use in a fluid pressure system in which a predetermined flex wrinkle pattern or a modification thereof is imparted to a surface of the flexible member to improve the flexing properties while the member is operating in such system. This pattern may consist of a simulation of the actual flex wrinkle pattern of a previously operating flexible member or be a compromise which employs a plurality of grooves having substantially the same pitch as the wrinkles. This invention results in the increased flex life and improved low temperature performance of the flexible member.

3,691,269

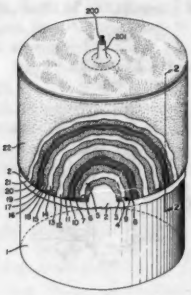
METHOD OF PREPARING A CONTAINER

Keith D. Robinson, Mogadore, Ohio, and James D. Tremelin, Akron, Ohio, assignors to Goodyear Tire and Rubber Company, Akron, Ohio

Continuation of Ser. No. 644,218, June 7, 1967, abandoned. This application Aug. 7, 1969, Ser. No. 849,294

Int. Cl. B29c *13/04*; B29h *9/02*

U.S. Cl. 264—255 3 Claims



A method of preparing a container having at least two compartments therein by the sequential and alternate deposition of layers of release agents and flexible polymeric materials over at least a portion of a convex or concave surface of a building form.

3,691,270

COSMETIC MAKEUP REMOVING OR TREATING COMPOSITION WHICH IS MICROENCAPSULATED AND INCORPORATED IN A FLEXIBLE SUPPORT

Roger Charle, Soisy-sous-Montmorency; Charles Zviak, Franconville, and Gregoire Kalopissis, Paris, all of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

Filed Feb. 4, 1970, Ser. No. 8,719

Claims priority, application Luxembourg, Feb. 4, 1969, 57,905

Int. Cl. A61k *7/02*

U.S. Cl. 424—28 6 Claims

A cosmetic makeup base foundation cream composition for the skin comprises an alveolar polymeric support containing a multiplicity of rupturable microcapsules containing said makeup base foundation cream.

3,691,271

SANITARY NAPKIN HAVING HOMOGENEOUSLY DISTRIBUTED MICROCAPSULES FILLED WITH DELAY RELEASABLE BACTERICIDAL AND FUNGICIDAL DEODORANT

Roger Charle, 61, Avenue Gavignot, Soisy-sous-Montmorency; Charles Zviak, 1, Rue Soldini, Franconville, and Gregoire Kalopissis, 65, Rue Vauvenargues, Paris, all of France

Filed Feb. 4, 1970, Ser. No. 8,721

Claims priority, application Luxembourg, Feb. 4, 1969, 57,907

Int. Cl. A61k *7/00*

U.S. Cl. 424—28 4 Claims

A sanitary napkin made of cellulose batting or layers of paper or cotton absorbent fabric and a multiplicity of individual microcapsules enveloping a deodorant agent. The microcapsules are homogeneously distributed in the cellulose batting or in alternating layers on the fabric to effect a delayed release of the deodorant therefrom, the walls of said microcapsules being permeable or soluble on contact with the fluid associated with menstrual discharge.

3,691,272

TOOTH-PASTE

Henning Asche, Riehen, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Continuation-in-part of Ser. No. 6,032, Jan. 23, 1970, abandoned, which is a continuation of Ser. No. 608,736, Jan. 12, 1967, abandoned. This application Sept. 22, 1970, Ser. No. 74,528

Int. Cl. A61k *7/16*

U.S. Cl. 424—57 6 Claims

Tooth-paste compositions consisting essentially of sodium chloride or marine salt, hydroxy-ethyl or -methyl cellulose, glycerol, a condensation product of ethylene oxide and polyoxypropylene glycol, a polishing agent such as dicalcium phosphate dihydrate, sodium metaphosphate or calcium orthophosphate, colloidally dispersed silica, the sodium slat of saccharine and/or sodium cyclamate, flavorings and water in such proportions as to provide a paste of acceptable taste and consistency.

3,691,273

LIQUID COSMETIC PRODUCT FOR FILLING APPLICATOR APPLIANCES AND ITS METHOD OF PREPARATION

Jean Hrand Marcarian, Paris, and Roland Louis Julien Clemencet, Suresnes, both of France, assignors to L'Oreal, Paris, France

Continuation-in-part of Ser. No. 644,290, June 6, 1967, abandoned. This application April 28, 1970, Ser. No. 32,722

Claims priority, application France, Feb. 17, 1970, 7005646

Int. Cl. A61k *7/02*

U.S. Cl. 424—63 5 Claims

The method of preparing a liquid cosmetic product is characterized in that finely crushed pigments are mixed with high organic polymers while dispersing them by means of a fatty oxyethylenated body, to the colloidal mass obtained are added polyols of low molecular weight in aqueous solution, then to the suspension thus obtained and kept in movement, the solution of polar compound is added.

3,691,274

COMPOSITIONS CONTAINING A HEART EXTRACT

Yvonne Thuillier, 16 rue Brunel, Paris, 16°, France

Filed April 16, 1968, Ser. No. 721,879

Claims priority, application France, April 17, 1967, 67102957

Int. Cl. A61k *17/00*

U.S. Cl. 424—95 3 Claims

The invention provides myocardiotonic compositions comprising a non-specific heart extract and one or more of

adenosine-triphosphoric acid or salt thereof, aspartic acid or a salt thereof, and vitamin B_6.

3,691,275

DIESTERS OF HALO-SUBSTITUTED ALKYLPHOSPHONATES

Isaac Benghiat, New City, N.Y., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Dec. 29, 1969, Ser. No. 888,965
Int. Cl. C07f 9/40; C08f 45/58
U.S. Cl. 260—961 5 Claims

Novel compositions of matter comprising diesters of polyhalo-substituted alkylphosphonates as exemplified by dimethyl 3-chloro-2,3-dibromopropylphosphonate are used as components in preparing compounds such as plastic, polymers, resins, etc. and will impart the desirable physical characteristics of flame retardancy or fire resistance to these compounds.

3,691,276

PROCESS FOR PREPARING O-ARYL PHOSPHONOCHLORIDOTHIONATES

Peter E. Newallis, Leawood, Kans.; Hans L. Nufer, Creve Coeur, Mo., and John P. Chupp, Kirkwood, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed March 13, 1970, Ser. No. 19,485
Int. Cl. C08f 9/20
U.S. Cl. 260—973 10 Claims

Preparation of O-aryl phosphonochloridothionates by the reaction of a phenolic compound with a thionophosphonic dichloride in the presence of a catalyst which can be metallic zinc, copper, aluminum, titanium, tin, antimony, iron or cobalt, or halides thereof.

3,691,277

PHOSPHORYLATED AND PHOSPHONYLATED DERIVATIVES OF MERCAPTOACETIC ACID-N',N'-DIALKYLHYDRAZIDES

Claus Stolzer, Wuppertal-Elberfeld; Ingeborg Hammann, Cologne, and Gunter Unterstenhofer, Opladen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed April 21, 1970, Ser. No. 30,577
Claims priority, application Germany, April 23, 1969, P 19 20 506.2
Int. Cl. C07f 9/16, 9/38; A01n 9/36
U.S. Cl. 260—923 10 Claims

Phosphorylated and phosphonylated derivatives of mercaptoacetic acid-N',N'-dialkylhydrazides, which are alkyl-or aryl-substituted in the 2-position, i.e. alkyl-esters of phosphoric or alkyl phosphonic (thiono) thiol acids attached through the thiol group to the 2-carbon of an alkyl-or aryl-substituted acetic acid whose carbonyl group is bound up as a dialkyl hydrazide, which possess arthropodicidal, especially acaricidal and insecticidal, properties, and processes for their production.

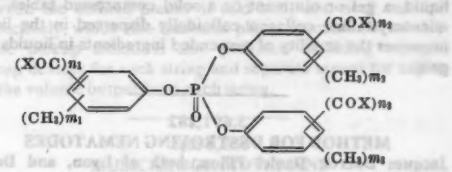
3,691,278

AROMATIC POLYCARBOXYLIC ACID HALIDES CONTAINING PHOSPHORUS

Hiroshi Kaminaka, Toyonaka; Norio Kotera, Amagasaki; Tatsuo Kanda; Hiroshi Kurumu, both of Toyonaka; Hideki Yanagihara, Takatsuki, and Yoshiro Murata, Minoo, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed June 3, 1970, Ser. No. 43,205
Claims priority, application Japan, June 3, 1969, 44/43899
Int. Cl. C07f 9/12; C08f 45/58
U.S. Cl. 260—942 5 Claims

A polyhaloformyltriphenyl phosphate represented by the formula,



wherein X is a halogen atom, and each of *n*'s and of *m*'s is an integer of 0 to 2, is produced by reacting a corresponding polycarboxytriphenyl phosphate with a halogenating agent. The novel phosphates are useful as an acylating agent in organic syntheses and as an intermediate in the synthesis of fire-retarding and antiflaming products such as polymers and industrial chemicals.

3,691,279

ANTIBIOTIC NEBRAMYCIN AND PREPARATION THEREOF

Robert Q. Thompson, Greenwood, Ind.; William M. Stark, Indianapolis, Ind., and Calvin E. Higgens, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. Nos. 488,109, Sept. 17, 1965, abandoned, and Ser. No. 798,587, Feb. 12, 1969, abandoned.
This application April 15, 1970, Ser. No. 28,212
Int. Cl. A61k 21/00
U.S. Cl. 424—116 7 Claims

Antibiotic complex nebramycin, obtained by culturing *Streptomyces tenebrarius* ATCC 17920 and isolated by elution from a cationic resin or precipitation as insoluble salts of alkylsulfoacetates, and the individual antibiotic factors thereof, said complex and factors having high gram-negative activity.

3,691,280

ANTIBIOTIC B-5050 AND PRODUCTION THEREOF

Eiji Higashide, Takarazuka; Toru Hasegawa, Kawanishi; Hideo Ono, Kobe; Mitsuko Asai; Masayuki Muroi, both of Osaka, and Toyokazu Kishi, Nara, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Aug. 13, 1970, Ser. No. 63,581
Claims priority, application Japan, Aug. 13, 1969, 44/64080
Int. Cl. A61k 21/00
U.S. Cl. 424—119 14 Claims

New antibiotic B-5050 is produced by culturing an antibiotic B-5050-producing micro-organism belonging to the genus Streptomyces in a culture medium containing assimilable carbon source and digestible nitrogen source under aerobic conditions until antibiotic B-5050 is substantially accumulated in the culture broth. Active ingredients of antibiotic B-5050 are antibiotics B-5050-A, B-5050-B, B-5050-C, B-5050-D, B-5050-E, and B-5050-F. The active ingredients and mixtures thereof are antimicrobially active.

3,691,281

MICROCRYSTALLINE COLLAGEN, METHOD OF MAKING SAME AND FOODS, PHARMACEUTICALS AND COSMETICS CONTAINING SAME

Orlando A. Battista, Yardley, Pa., assignor to FMC Corporation, New York, N.Y.

Division of Ser. No. 586,969, Oct. 17, 1966, abandoned. This application Feb. 2, 1970, Ser. No. 12,504

Int. Cl. A61k 9/06

U.S. Cl. 424—195 **7 Claims**

Pharmaceutical compositions which include in addition to the pharmaceutical ingredient or ingredients a water-insoluble, ionizable, partial salt of collagen or microcrystalline collagen. The composition may be in the form of a pourable liquid, a gel or ointment or a solid compressed tablet. The microcrystalline collagen colloidally dispersed in the liquid improves the stability of suspended ingredients in liquids and gels.

3,691,282

METHOD FOR DESTROYING NEMATODES

Jacques Ducret; Daniel Pillon, both of Lyon, and Daniel Demozay, Villeurbanne, all of France, assignors to PEPRO, Societe pour Le Developpement et La Vente de Specialties Chimiques, Lyon, France

Filed Nov. 19, 1970, Ser. No. 91,162

Claims priority, application France, Nov. 26, 1969, 6940677

Int. Cl. A01n 9/36

U.S. Cl. 424—200 **2 Claims**

0-0-diethyl-0-3-pyridyl thiophosphate is used as a nematocide.

3,691,283

METHOD FOR THE CONTROL OF HELMINTHS IN WARM-BLOODED ANIMALS USING BIS-N-PHOSPHORYLATED COMPOUNDS

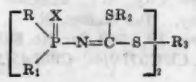
Mary Ehlers Doscher, 147 Gary Drive, Trenton, N.J.

Filed April 15, 1971, Ser. No. 134,453

Int. Cl. A61k 27/00

U.S. Cl. 424—204 **10 Claims**

The present invention relates to a novel method of controlling helminths in warm-blooded animals and involves administering to said animals an anthelmintically effective amount of a bis-N-phosphorylated compound represented by the structure:



wherein R and R_1 each represent members selected from the group consisting of loweralkyl, loweralkoxy and phenyl; X is sulfur or oxygen; R_2 is loweralkyl, loweralkenyl, benzyl or halo-substituted benzyl; and R_3 is a loweralkylene radical, such as methylene, ethylene, loweralkyl substituted ethylene, trimethylene, loweralkyl substituted trimethylene, oxydimethylene, tetramethylene or loweralkyl substituted tetramethylene.

ERRATUM

For Class 424—303 see:
Patent No. 3,691,185

ELECTRICAL

3,691,284

TARGET SIMULATOR FOR AN OPTICAL SIGHT

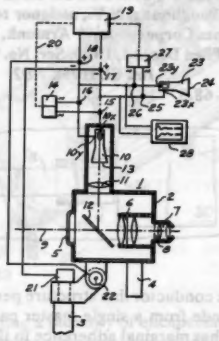
Jan Lennart Borjeson, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Filed Feb. 26, 1971, Ser. No. 119,329

Claims priority, application Sweden, March 6, 1970, 3048/70

Int. Cl. G09b *9/00*; F41g *3/26*

U.S. Cl. 35—10.2 **6 Claims**



The invention relates to a target simulator for optical aiming sights for simulating a moving target for the training of personnel in the use of the sight. The simulator device produces electronically a luminous dot, circle or ellipse, which appears within the field of view of the aiming sight and moves therein against the terrain or sky background in exactly the same manner as a real target and which can be tracked by operation of the aiming sight in exactly the same manner as when tracking a real target. A training instructor can continuously supervise the performances of the pupil when catching and tracking the simulated target and furthermore the tracking error can be automatically recorded for later analysis. The simulated target symbol can be moved within the field of view of the sight so as to duplicate practically any arbitrarily selected movements of a real target.

3,691,285

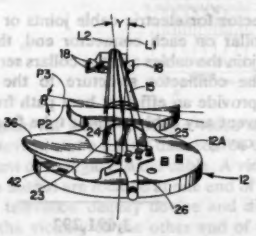
MUSICAL INSTRUMENT

Spencer Lee Larrison, 23 Washburn St., Auburndale, Mass.

Filed July 9, 1970, Ser. No. 53,388

Int. Cl. G10h *3/00*

U.S. Cl. 84—1.16 **20 Claims**



A stringed musical instrument, which is preferably adapted to be bowed, including a solid body and an elongated neck member attached to and extending from the body. Conventional means may be provided for securing a set of strings at one end to the body and at the other end to a head which forms part of the neck member at the end of the neck member remote from the body. In a conventional instrument a centerline may be defined for both the body and neck wherein these centerlines are either in line or parallel to each other. However, in the present invention an angle is formed between the defined centerline of the body and the defined centerline of the neck, thereby making the instrument more comfortable to play. Also, in a conventional instrument, a plane may be generally defined for a top surface of both the body and neck wherein these planes are either in line or parallel to each other. However, in the present invention an angle is formed between the defined planes of said body and neck member respectively, which also increases player comfort. Novel electronic pickup means is also provided including separate pickup devices for each string and separate means for adjusting the volume output from each string.

3,691,286

MUSICAL BOX MOVEMENT

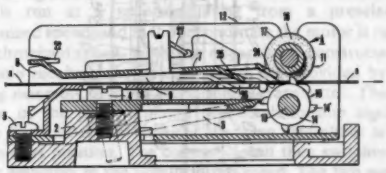
Fumito Komatsu, and Goro Adachi, both of Nagano, Japan, assignors to Kabushiki Kaisha Sankyo Seiki Seisakusho, Suwa-gun, Nagano, Japan

Filed Dec. 27, 1971, Ser. No. 212,164

Claims priority, application Japan, Dec. 25, 1970, 45/140554

Int. Cl. G10f *1/06*

U.S. Cl. 84—101 **16 Claims**



A music box movement for playing a musical score provided in a tape or band in the form of perforations therein. The members required for playback or sound-reproduction of the tape are arranged in parallel manner on a horizontal die-cast base frame so that the movement can be incorporated in a jewel-box or the like.

3,691,287

SUPPORT ARRANGEMENT FOR THE CONDUCTORS OF LOW TEMPERATURE CABLES

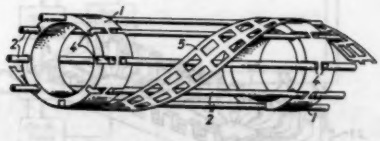
Henning Falke, Angermund, Germany, assignor to Vereinigte Draht-und Kabelwerke Aktiengesellschaft Berlin und Duisburg, Berlin, Germany

Filed April 22, 1971, Ser. No. 136,317

Claims priority, application Germany, April 22, 1970, P 20 20 735.6; April 22, 1970, P 70 15 981.8

Int. Cl. H01b *7/02*

U.S. Cl. 174—28 **8 Claims**



A low temperature cable including support means for carrying electrical conductors on a cylindrical surface disposed concentrically of the axis of the cable and which is designed to reduce tensile stress and relative movement in the cable as it is cooled. A plurality of aligned supporting rings are initially

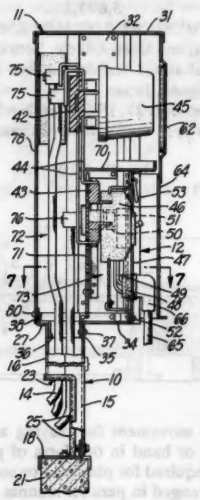
held in spaced relationship by means of a number of rod members that extend between adjacent rings with the ends of the rods loosely held in recesses near the outer peripheral surfaces of the rings. This structure is completed to a tube-like configuration by a wrapping of foil or tape. The rods and rings on the one hand and the foil or the tape on the other hand are usually, of different materials having different coefficients of contraction so that as the completed structure is cooled, the rods contract to an extent that they are disengaged from the rings and the movement of the rings, caused by the contraction of the foil or tape, relative to each other is not hampered.

3,691,288

ELECTRICAL POWER OUTLET FOR TRAILER CAMP SITES AND THE LIKE

Rex E. Sturdivan, Jackson, Miss., assignor to Zinsco Electrical Products, Los Angeles, Calif.

Filed Dec. 14, 1970, Ser. No. 97,844
Int. Cl. H02b 9/00, 1/04, 1/10
U.S. Cl. 174—38 **7 Claims**



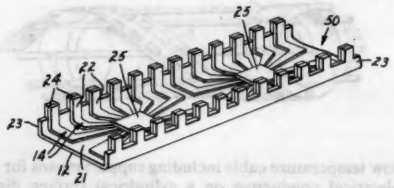
A power distribution system for mobile home parks and the like. A hollow post for mounting in the ground and a power panel box mounted thereon and carrying a plug-in meter and a plug-in outlet fitting with interchangeable circuit breakers and receptacles. A power panel box with separated line and load zones and a fully accessible line side cable path.

3,691,289

PACKAGING OF SEMICONDUCTOR DEVICES

Robert R. Rohloff, Lakeland, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 22, 1970, Ser. No. 82,872
Int. Cl. H05k 5/00
U.S. Cl. 174—52 PE **8 Claims**



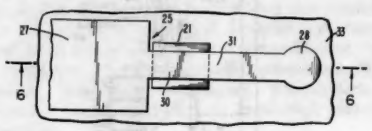
A packaging device is provided for the housing of semiconductor devices to facilitate handling, testing and later attachment thereof to further electrical circuitry. The packaging device comprises a self-supporting dielectric substrate in the form of a channel and a plurality of conductive land areas on the inner surfaces of the channel. The land areas define at least one site within the channel which is adapted to electrically receive a semiconductor device. The land areas extend outward from said site in the form of fingers, the fingers extending upwardly along the side walls of the channel so as to be exposed for later attachment thereof to further electrical circuitry.

3,691,290

DELETABLE CONDUCTOR LINE STRUCTURE

John Napier, Poughquag, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 14, 1970, Ser. No. 97,857
Int. Cl. H05k 1/02
U.S. Cl. 174—68.5 **7 Claims**



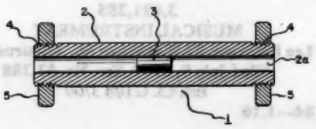
A deletable conductor line structure permits a variety of circuits to be made from a single master pattern. A thin film of metal, which has marginal adherence to the circuit supporting substrate material, is first deposited in a discontinuous pattern on the surface of the substrate. A master circuit pattern of conductive material is then deposited on the substrate such that portions of the master circuit conductor lines overlie the discontinuous metal pattern. A selected circuit is formed by deleting certain portions of the conductor lines at the point where they overlie portions of the metal film having marginal adherence to the substrate.

3,691,291

SPLICE FOR JOINING HIGH VOLTAGE CABLES

Hatim H. Taj, Schenectady, N.Y., assignor to General Electric Company

Filed April 19, 1971, Ser. No. 135,166
Int. Cl. H02g 3/06
U.S. Cl. 174—73 R **4 Claims**



A connector for electric cable joints or splices has an adjustable collar on each connector end, the connector ends serving to join the cables and the collars serving to electrically connect the connector structure to the connector cavity shield, to provide an efficient heat path from the connector, and to prevent any cable adaptor tube from moving into the connector cavity.

3,691,292

Patent Not Issued For This Number

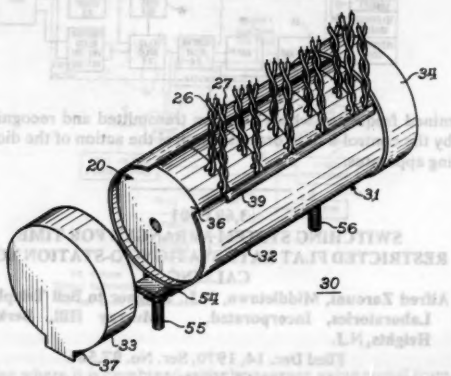
3,691,293

Patent Not Issued For This Number

3,691,294
PACKAGE FOR ENCAPSULATED ELECTRICAL COMPONENTS

Joseph T. Charles, Mount Prospect, Ill., assignor to Coil Sales, Inc., Arlington Heights, Ill.

Continuation-in-part of Ser. No. 877,384, Nov. 17, 1969, abandoned. This application Oct. 5, 1970, Ser. No. 78,630
Int. Cl. H01f 17/08, 15/02, 27/04
U.S. Cl. 178—46 11 Claims

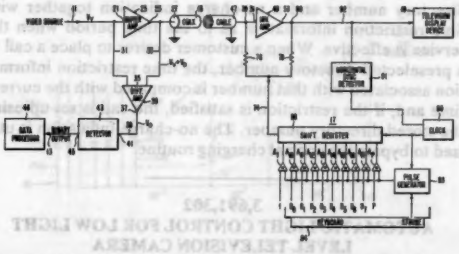


A package for holding a plurality of encapsulated electrical components comprising a cylindrical case having a lengthwise slot through which the leads of the components extend, and an adjustable mounting means carried by the case which is offset from the lengthwise slot.

3,691,295
TWO-WAY COMMUNICATION SYSTEM FOR VIDEO AND DIGITAL DATA

Dale E. Fisk, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed March 31, 1970, Ser. No. 24,264
Int. Cl. H04l 5/14
U.S. Cl. 178—58 12 Claims

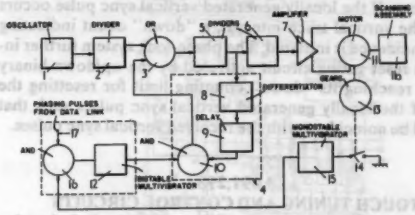


Transmission system for jointly linking a video source to a television display device, and a digital data source to a digital data output by means of a single coaxial cable. A video source and the digital data output are located at one end of the coaxial cable, with the television display device and digital data source located in the vicinity of the other end of the cable. Circuit arrangements are provided at the video source end of the cable, and also at the digital data source end of the cable, for respectively separating the video signal and the digital data signal from each other to thereby facilitate the transmission of video information in one direction through the coaxial cable while digital data is simultaneously transmitted through the cable in the other direction.

3,691,296
SYNCHRONIZING ARRANGEMENT FOR A MOTOR DRIVEN FACSIMILE SCANNING ASSEMBLY

Graham Edward Marshman, Ottawa, Ontario, Canada, assignor to Muirhead Limited, Beckenham, Kent, England

Filed June 3, 1970, Ser. No. 42,912
Claims priority, application Great Britain, June 11, 1969, 29,670/69
Int. Cl. H04n 1/36
U.S. Cl. 178—69.5 F 3 Claims

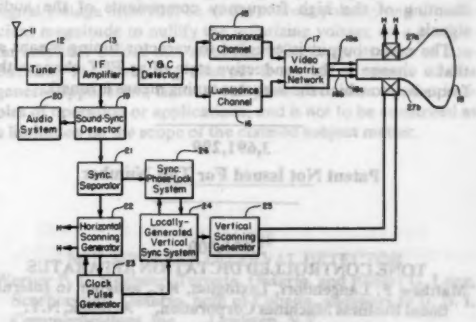


In facsimile apparatus including a motor driven scanning assembly, a speed control circuit for the motor and marker means providing a signal each time the scanning assembly is in the scan-start position are connected to a comparator. The comparator is adapted to receive phasing pulses from a facsimile data link and is arranged to switch the control circuit from a first to a second state when it detects a predetermined phase relationship between a signal from the marker means and a phasing pulse. In the first state of the control circuit the motor is run at a speed differing from a preselected synchronized speed, and in the second state the motor is run at the synchronized speed. When the apparatus is constructed as a facsimile receiver, the phasing pulses are provided by the scanning assembly of a remote facsimile transmitter. The occurrence of the predetermined phase relationship signifies that the transmitter and receiver scanning assemblies are at the scan-start position. The control circuit then switches the receiver assembly to the synchronized speed. The two assemblies then run in synchronism during scanning.

3,691,297
SYNCHRONIZATION PHASE-LOCK SYSTEM FOR A DIGITAL VERTICAL SYNCHRONIZATION SYSTEM

Richard G. Merrell, Darien, and Melvin C. Hendrickson, Elmhurst, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Filed May 6, 1971, Ser. No. 140,852
Int. Cl. H04n 5/04
U.S. Cl. 178—69.5 TV 10 Claims



A synchronization phase-lock system in a television receiver for maintaining coincidence between locally-generated vertical synchronization pulses and vertical synchronization pulses developed from received television transmissions. The phase-

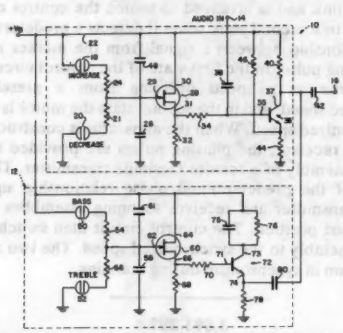
lock system utilizes the received vertical sync pulses in conjunction with gating circuitry to condition an up/down binary counter to count, within predetermined limits, in a first, or "up", direction during the received vertical sync interval and in the opposite, or "down" direction during the vertical trace interval of the received signal. Locally generated vertical sync pulses are also applied to the up/down binary counter wherein each pulse initiates one count. A locally generated vertical sync pulse occurring during the received vertical sync pulse interval generates one "up" count representative of coincidence between the received and locally generated vertical sync pulses. If the locally generated vertical sync pulse occurs during the vertical trace interval, a "down" count indicating non-coincidence is initiated. The phase-lock system further includes a reset gating circuit activated by the up/down binary counter reaching its "down" counting limit for resetting the phase of the locally generated vertical sync pulses such that they will be coincident with the received vertical sync pulses.

3,691,298

TOUCH TUNING AND CONTROL CIRCUITS

Carl R. Pittman, and James A. Long, both of Arvin Industries, Inc., Columbus, Ind.

Filed Dec. 3, 1970, Ser. No. 94,896
Int. Cl. H03g *1/02*
U.S. Cl. 179—1 VL **16 Claims**



An electronic circuit for adjusting the volume and tone of an audio signal is controlled by appropriately bridging contacts included therein with a human finger or other conductive means. The length of time that a contact is bridged, or closed, determines the conductive state of a field effect transistor associated therewith. One such FET controls the gain of an audio amplifier whereby the amplitude of the audio signal is controlled. The conductive state of a second such FET controls the biasing voltage on a junction transistor to control the shunting of the high frequency components of the audio signals.

The audio output is coupled to varactor tuning means so that a change in the conductive state of an FET changes the frequency to which the varactor tuning means is tuned.

3,691,299

Patent Not Issued For This Number

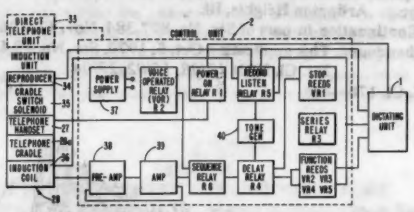
3,691,300

TONE CONTROLLED DICTATION APPARATUS

Matthew P. Langendorf, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1965, Ser. No. 468,304
Int. Cl. H04m *11/10*; G11b *19/02*
U.S. Cl. 179—6 E **13 Claims**

The invention relates to tone control arrangements for dictating apparatus using mechanical reed generators and transistor-reed relay circuits. The apparatus has a central dictation unit with an associated control unit. The generators are operated by the dictator to generate tone signals of predeter-



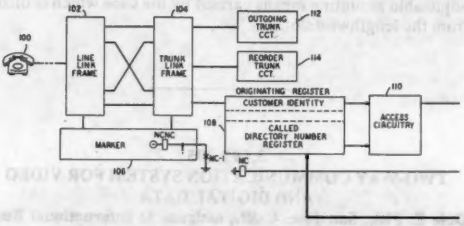
mined frequency which are then transmitted and recognized by the control unit in order to control the action of the dictating apparatus.

3,691,301

SWITCHING SYSTEM ARRANGED FOR TIME RESTRICTED FLAT RATE STATION-TO-STATION TOLL CALLING

Alfred Zarouni, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 14, 1970, Ser. No. 97,566
Int. Cl. H04m *15/22*
U.S. Cl. 179—7.1 R **7 Claims**



A switching system is disclosed which allows subscribers to place calls at prescribed times on an abbreviated dialing basis to preselected directory numbers for a flat rate charge. A common memory is provided with a word storing the called directory number and a no-charge indication together with time restriction information as to the time period when the service is effective. When a customer desires to place a call to a preselected directory number, the time restriction information associated with that number is compared with the current time and, if the restriction is satisfied, the call is set up using the stored directory number. The no-charge indication is utilized to bypass the normal charging routine.

3,691,302

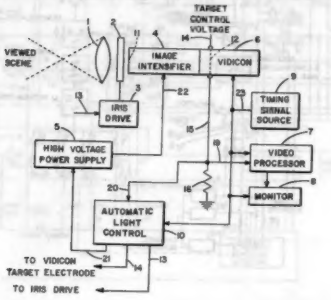
AUTOMATIC LIGHT CONTROL FOR LOW LIGHT LEVEL TELEVISION CAMERA

Rolf Gaebele, Redwood City, and Jack H. Jones, Sunnyvale, both of Calif., assignors to GTE Sylvania Incorporated

Filed Feb. 25, 1971, Ser. No. 118,660
Int. Cl. H04n *5/14*
U.S. Cl. 178—7.2 **13 Claims**

The video signal in a low light level television camera is fed to a first operational amplifier which continuously integrates this signal to produce an indication of the average value of the intensity of light in a viewed scene. The video signal is also applied to a pair of circuits that detect and store the peak values of the video signal in alternate fields formed by the scanning electron beam in the camera pick-up tube. During formation of one field, the peak value of the intensity of light in the

viewed scene is detected and stored in one circuit while the stored indication of the peak intensity of the light detected by the other circuit during the preceding field is integrated in a second difference amplifier. The output voltage of the second amplifier is a measure of the difference between the stored peak voltage applied thereto and a reference voltage. This difference voltage is passed by a diode switch to a summing amplifier where it is combined with the average value signal from the first amplifier if the peak value signal indicates that the intensity of light from the viewed scene exceeds a prescribed peak reference light intensity. The combined signal is applied to a voltage translator which produces signal voltages of the correct polarities for varying the gains of image intensifier and vidicon pickup tubes of the camera inversely with respect to changes in the intensity of light from the viewed scene.

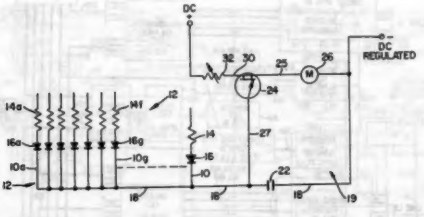


3,691,303

CIRCUIT USAGE ANALYZER

Dennis Davies, Tucker, and John P. Kern, Atlanta, both of Ga., assignors to Digital Telephone Systems, Inc., San Rafael, Calif.

Filed Jan. 19, 1970, Ser. No. 3,624
Int. Cl. H04m *15/32*
U.S. Cl. 179—8 A **10 Claims**



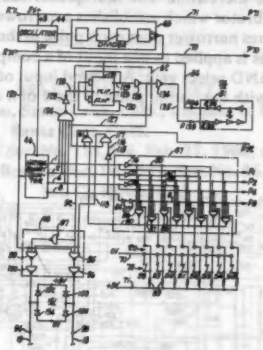
A telephone traffic usage analyzer and recorder providing a method of simultaneously reading all of a number of telephone circuits at one time so as to collect telephone traffic data from a plurality of such telephone circuits, known as sleeves, arranged in a trunk group. Each sleeve circuit has a resistor. A cumulative condenser is charged through the resistance in each sleeve, and the condenser is then discharged at a given voltage which provides an output signal to indicate one CCS unit which is the standard measure of telephone traffic data. In effect, this is a variable pulsing device with the rate of pulse being governed by the number of sleeve leads that are busy. By using the appropriate resistors and capacitors each pulse indicates one CCS.

3,691,304

MULTIPLEXER TRANSMISSION LINE CIRCUIT

Werner P. E. Huebner, Toronto, Ontario, and Robert G. Long, Scarborough, Ontario, both of Canada, assignors to D. D. I. Communications, Inc., Lewiston, N.Y.

Filed June 30, 1971, Ser. No. 158,361
Int. Cl. H04j *1/00*
U.S. Cl. 179—15 R **35 Claims**



A transmission line circuit is disclosed for a multiplexer which has first and second transmission conductors on which a multiplexed signal of a pulsed message train is transmitted and received. The transmission line circuit limits the possible voltage across the transmission line by using a plurality of diodes. In one form a diode bridge is constructed and connected to two different voltages on a DC reference source so that should a voltage, for example, an extraneous noise voltage appear across the line, it will be conducted by the diode bridge so long as the voltage exceeds the voltage drop of the diodes and the voltage presented by the DC voltage source. In an alternative arrangement, breakdown diodes are connected across the transmission line and connected to a DC reference source such that if an extraneous voltage appears across the transmission line which exceeds the voltage drops of the connected breakdown diodes and any connected voltage of the DC reference source, then conduction will be effected through the breakdown diodes to limit the voltage.

A multiplexer transmission line circuit has an equalizing function and incorporates first and second voltage dividers to establish first points on two voltage dividers to which inputs to two amplifiers are connected. Second points at a potential different from the first points are also provided on the two voltage dividers and these second points are at the same potential and are connected to the first and second transmission lines. This establishes a polarizing voltage on each amplifier and the signal voltage must first be of the correct polarity and of sufficient magnitude to nullify the polarizing voltage on a particular amplifier before that amplifier will change its state of conduction. The foregoing abstract is merely a resume of one general application, is not a complete discussion of all principles of operation or applications, and is not to be construed as a limitation on the scope of the claimed subject matter.

3,691,305

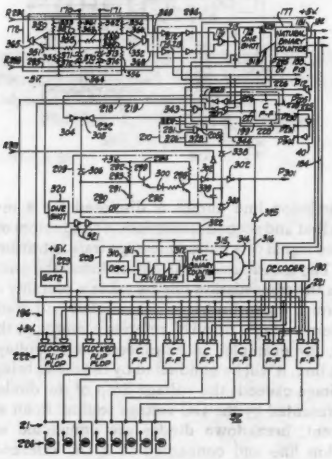
MULTIPLEXER INTERVAL DETECTOR

Werner P. E. Huebner, Toronto, Ontario, and Robert G. Long, Scarborough, Ontario, both of Canada, assignors to D. D. I. Communications, Inc., Lewiston, N.Y.

Filed June 30, 1971, Ser. No. 158,375
Int. Cl. H04j *3/04*
U.S. Cl. 179—15 AW **15 Claims**

An interval detector for a multiplexer receiver is disclosed for determining the interval between pulses in a pulsed

message train which is a time division multiplexed signal. The pulsed message train has pulses occurring at a scanning frequency and in the interval detector there is a means to develop a checking pulse frequency which includes a crystal controlled oscillator and a series of dividers to develop this checking pulse frequency which is some multiple *n* higher than the scanning frequency. A decoding gate decodes 1 of *n* pulses from the checking frequency means and establishes an output pulse therefrom. The multiplexer receiver has a one-shot multivibrator which establishes a narrower pulse approximately *n* times narrower than each pulse in the pulsed message train and this is applied to one input of a comparator which includes a NAND reject gate. A second input of the comparator is supplied with the output pulse of the 1 of *n* decoding gate so



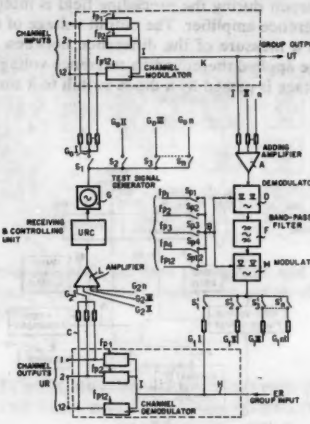
that the two input pulses are substantially coincident in time and in opposition to thus maintain the same output condition on the decoding gate. If a noise pulse is received which is out of order on the message pulse train, then this resets the checking frequency means and thus produces a pulse on the second input which is non-coincident with the pulse on the first input of the comparator and hence produces a change in the output of the comparator. An acceptance means thus rejects all the pulses in the message train received up to that time of the change of output of the comparator. The foregoing abstract is merely a resume of one general application, is not a complete discussion of all principles of operation or applications, and is not to be construed as a limitation on the scope of the claimed subject matter.

3,691,306
APPARATUS AND PROCESS FOR DETECTING MALFUNCTIONS IN A FREQUENCY DIVISION MULTIPLEX SYSTEM

Francesco Molo, Corso Lodi 59, and Alberto Giacometti, via Illirico 12/4, both of Milan, Italy

Filed July 2, 1970, Ser. No. 52,054
Int. Cl. H04j 1/16
U.S. Cl. 179—15 BF **10 Claims**

A process and an apparatus for automatically detecting malfunctions of an individual channel in a communication system by introducing a test signal onto all of the channels at the



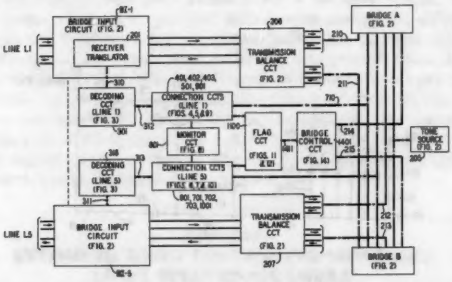
transmitting end and sequentialy extracting the test signal and inserting it into the receiving end where it is then detected.

3,691,307
Patent Not Issued For This Number

3,691,308
MULTILINE SELECTIVE SIGNALING SYSTEM

Ronald Joseph Angner, Freehold, and Anthony Koscinski, Brick Town, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Nov. 27, 1970, Ser. No. 93,158
Int. Cl. H04m 1/70, 13/00
U.S. Cl. 179—18 BH **18 Claims**

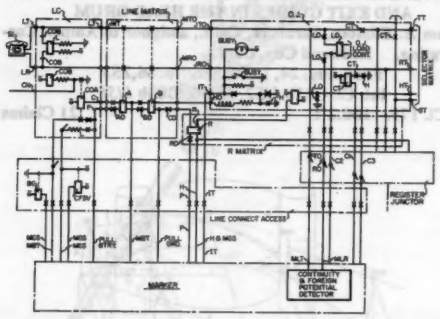


A multiline selective signaling system is arranged to generate privacy lockout tones when a first station on any line goes off-hook. The first such station off-hook is designated a controlling station and circuitry at each station or common to a group of stations responds to the lockout tones by removing signaling and communicating capability from all but the controlling station. On interline calls single station control of the system is maintained by an interline control circuit which is arranged to inhibit the first station going off-hook in a called line from also becoming a controlling station. On interline override calls dialing capability is removed from the interference with previously established called line connections.

3,691,309
CONTINUITY AND FOREIGN POTENTIAL DETECTOR

Todd Gartner, Franklin Park, and Hendrik W. Van Husen, Glen Ellyn, both of Ill., assignors to Automatic Electric Laboratories, Inc., Northlake, Ill.

Filed Dec. 21, 1970, Ser. No. 99,935
Int. Cl. H04m 3/22
U.S. Cl. 179—18 AB 10 Claims

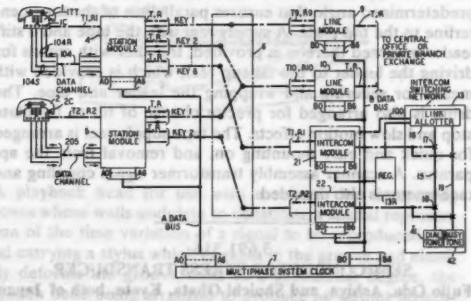


A marker controlled communications switching system is disclosed which is arranged to automatically and progressively test the talking path as it is set up, prior to completion of the communication connection. The equipment includes saturable core magnetic devices to which the conductors to be tested are connected. An alternating current drive winding and a test winding are also coupled to the cores. The resultant wave shape from the test winding is then compared with a predetermined test wave shape to provide a binary output indicative of the line conductor condition.

3,691,310
BUSY AND TALKING LINK ALLOTTER CIRCUIT FOR ELECTRONIC KEY TELEPHONE SYSTEM

Francis Michael Fenton, Boulder, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 21, 1970, Ser. No. 100,311
Int. Cl. H04m 3/22
U.S. Cl. 179—18 AD 12 Claims

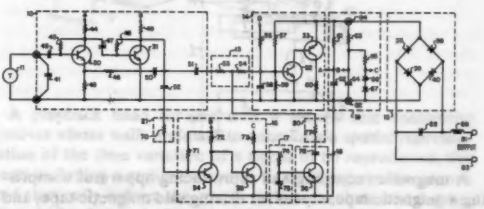


An electronic key telephone system is disclosed in which each station set regardless of the number of pick-up keys with which it may be equipped may be connected to a local switching network via only a single pair of tip and ring conductors and a data link. The local switching network provides for intercom calls among the local key telephone sets through the use of an allotter circuit which detects an intercom service request during a predetermined time slot to accord a first station access to a talking link and to a call signaling register. When the called station is rung and answers the call, it is accorded access to the talking link by making a service request in a manner similar to that of the first calling station. The allotter circuit connects any other service requesting station to a busy link. Provision is made for compensating for variations in the operating times of the circuits in the allotter with respect to the assigned time slot during which operation is desired to take place. Simplification is achieved in that NOR gate flip-flops are used to connect stations to the busy link and the operation of one of these flip-flops may be canceled when desired by the simultaneous application of set and reset input signals.

3,691,311
TELEPHONE USER SET

Donald R. Wilson, Santa Cruz, Calif., assignor to Pacific Plantronics, Inc., Santa Cruz, Calif.

Continuation of Ser. No. 714,396, Feb. 27, 1968, abandoned.
This application Dec. 10, 1970, Ser. No. 96,685
Int. Cl. H04m 1/60
U.S. Cl. 179—81 B 8 Claims



Telephone user set including amplifier apparatus operating with an electroacoustic transducer provides signal output on a pair of lines which also supply the operating power. One embodiment operates at high gain in response to voice input signal and operates with low gain in the absence of voice input signal for providing suppression of background noise.

3,691,312
TAPE RECORDING APPARATUS AND SYSTEM HAVING A VERY THIN CASSETTE

Christian C. Petersen, Westwood, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

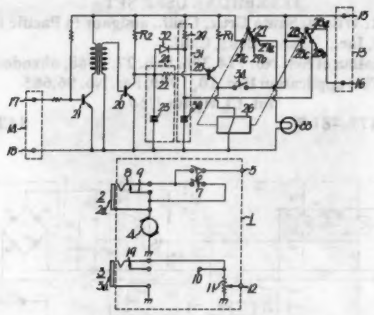
Filed May 25, 1970, Ser. No. 40,898
Int. Cl. G11b 23/04, 23/44
U.S. Cl. 179—100.2 Z 26 Claims

An audio-visual recording system featuring a magnetic tape cassette in combination with a surface for supporting one or two photographic prints. The tape cassette portion of the assembly is very thin, having a width approximating the sum of the widths of the supporting surface and two photographic prints. The cassette is configured having a length coextensive with one peripheral edge of a photograph of standard size. Magnetic tape wound within the cassette may have a width of about 0.050 inch (0.127 cm).

3,691,313
SIGNAL RESPONSIVE CONTROL CIRCUIT FOR MAGNETIC RECORDING AND REPRODUCING APPARATUS

Hiroshi Kobayashi, and Sukeyori Shiba, both of Tokyo, Japan, assignors to Kabushikikaisha Nippon Recruit Center, Tokyo, Japan

Filed June 4, 1970, Ser. No. 43,364
Claims priority, application Japan, June 14, 1969, 44/47128; June 14, 1969, 44/47129
Int. Cl. G11b *15/22*
U.S. Cl. 179—100.2 S **2 Claims**

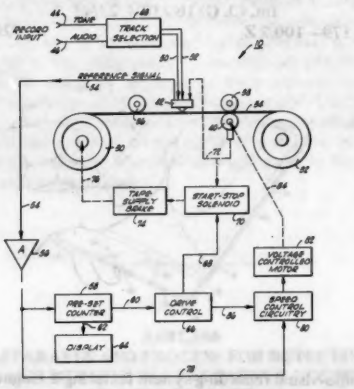


A magnetic recording and reproducing apparatus comprising a magnetic tape, means for driving said magnetic tape, and means for automatically stopping the operation said magnetic tape driving means upon arrival of a signal on which a learner or an operator is required to think or perform some function.

3,691,314
METHOD FOR RECORDING PREDETERMINED INFORMATION DURATION WITHIN PRE-SET RECORD LENGTH

Lawrence R. De Bell, Bethany, and David D. Price, Oklahoma City, both of Okla., assignors to Economy Co., Oklahoma City, Okla., by said De Bell

Filed Nov. 2, 1970, Ser. No. 86,261
Int. Cl. G11b *15/52*
U.S. Cl. 179—100.2 S **8 Claims**

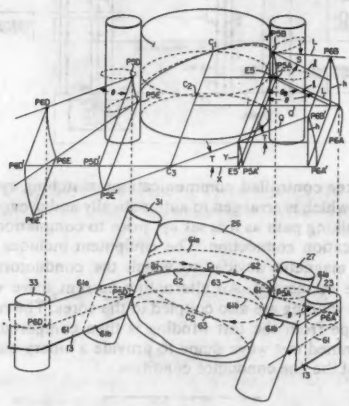


A method and apparatus for recording information of predetermined duration within allotted tape space of a recording track. The method is particularly applicable to plural track record mediums which include companion audio and control tone information recorded in adjacent disposition, and one record track is reserved for pre-recording of a plurality of pulses at a constant rate per linear measure. During recording of audio information, the recording tape speed is controlled by analog computational apparatus which resolves information length versus the available recording space to vary the recording speed so that message termination occurs at a designated point on the record medium.

3,691,315
HELICAL SCAN MAGNETIC RECORDER HAVING A CRITICAL ANGLE FOR THE TAPE AT THE ENTRANCE AND EXIT GUIDES IN THE HEAD DRUM

William A. Ellmore, Saratoga, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Aug. 24, 1970, Ser. No. 66,253
Int. Cl. G11b *5/52, 15/66*; G03b *1/58*
U.S. Cl. 179—100.2 T **21 Claims**



To facilitate automatic self-threading operation, a helical scan magnetic tape apparatus is arranged so that the tape centerline follows a path substantially parallel to the top plate of the machine, the scanning drum and guides therefor being tilted at an angle to the top plate. Exit and entrance guides for the tape at the drum are parallel to the drum axis and therefore also tilted, but all other tape guides are normal to the top plate. The tape is taken off the entrance and exit guides at a predetermined angle that ensures parallelism of the tape centerline to the top plate. A supply reel with the tape and a stiff leader mounted thereon is provided, together with means for driving the leader to the takeup reel, which is provided with means for securing and wrapping the leader and tape. The drum is also arranged for precise change of tilt to facilitate stop and slow motion effects. The tape supply reel is arranged for quick and easy mounting on, and removal from the apparatus. A scanner assembly transformer signal coupling and tachometer is also provided.

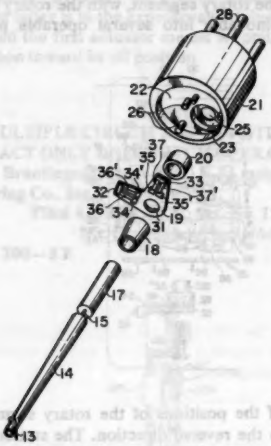
3,691,316
SEMICONDUCTOR STRESS TRANSDUCER

Fujio Oda, Ashiya, and Shuichi Obata, Kyoto, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 4, 1970, Ser. No. 34,506
Claims priority, application Japan, May 9, 1969, 44/36830; May 9, 1969, 44/36831; May 9, 1969, 44/36833; May 9, 1969, 44/36832
Int. Cl. H04r *1/16, 9/12, 11/08*
U.S. Cl. 179—100.41 V **4 Claims**

A semiconductor stress transducing apparatus in which a semiconductor layer having a large piezo-resistance effect is deposited by vacuum evaporation on a highly flexible thin-film

substrate of an insulating material and a bending stress is imparted to the deposited semiconductor layer through a flowable viscous material, whereby a change in the internal resistance of the semiconductor layer is detected.



3,691,317

PRESSURE RESPONSIVE PLAYBACK DEVICE FOR MECHANICALLY RECORDED SIGNALS

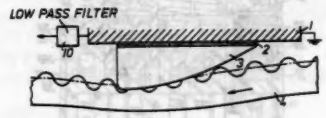
Gerhard Dickopp, Hattenheimer Strasse 15, D-1 Berlin, 28, Germany

Continuation-in-part of Ser. No. 87,064, Nov. 5, 1970. This application May 11, 1971, Ser. No. 142,237

Claims priority, application Germany, May 13, 1970, P 20 24 539.0

Int. Cl. H04r 17/04

U.S. Cl. 179—100.41 P **14 Claims**



A playback head for use with a record disc containing grooves whose walls undulate to constitute a spatial representation of the time variation of a signal to be reproduced, the head carrying a stylus which engages in the groove and elastically deforms the groove walls to a substantial degree, the playback head being arranged to produce an output proportional to the reaction force exerted on the stylus by the elastically deformed groove walls, the stylus being formed to have a shallow leading edge which extends in the direction of the groove axis to contact the groove walls for a distance equal to a plurality of wavelengths of the recorded signal and a steep trailing edge which contacts the groove walls for a distance no greater than one half of a wavelength of the recorded signal, the leading and trailing edges meeting at the lowermost point of the stylus, and a lowpass filter being connected to the head output for attenuating frequencies greater than twice the lowest recorded frequency.

3,691,318

PRESSURE PICKUP TRANSDUCERS FOR MECHANICALLY STORED SIGNALS

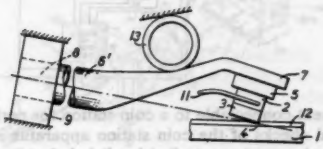
Eduard Schuller, Wedel/Holstein; Horst Redlich, Berlin; Gerhard Dickopp, Berlin, and Hans-Joachim Klemp, Berlin, all of Germany, assignors to TED Bildplatten Aktiengesellschaft Aeg-Telefunken-Teldec, Zug, Switzerland

Continuation-in-part of Ser. No. 798,709, Feb. 12, 1969, Pat. No. 3,652,809. This application May 17, 1971, Ser. No. 144,116

Claims priority, application Germany, May 15, 1970, P 20 25 032.2

Int. Cl. H04r 17/04

U.S. Cl. 179—100.41 P **38 Claims**



A playback head for use with a record disc containing grooves whose walls undulate to constitute a spatial representation of the time variation of a signal to be reproduced, the head including a stylus carried so as to engage in the groove and elastically deform the groove walls to a substantial degree, the playback head also having a transducer arranged to produce an output proportional to the reaction force exerted on the stylus by the elastically deformed groove walls, the transducer being a thickness compression vibrator having a dimension in the direction of the reaction force which is less than one-half the wavelength of a mechanical oscillation produced in the transducer for the upper limit frequency of the frequency range to be reproduced.

3,691,319

STABILIZER FOR HEADSET

James William Moore Bee, Ottawa, Ontario, Canada, assignor to Northern Electric Company Limited, Quebec, Canada

Filed May 3, 1971, Ser. No. 139,739

Int. Cl. H04m 1/05

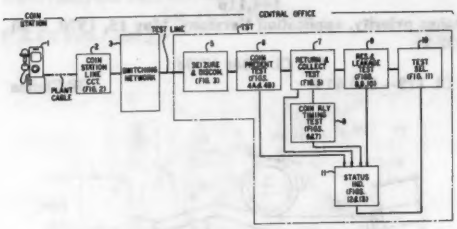
U.S. Cl. 179—156 A **5 Claims**

Stabilizer for a headset which fits around an ear of a user, in which the stabilizer has two substantially parallel webs which engage with the Helix of the ear approximately at the position just above where the Helix merges into the face of the user. A housing of the headset fits over and around the top of the ear, between the ear and the scalp, and the stabilizer prevents a boom extending from the housing from moving in a direction normal to the face of the user, which movement would cause movement of a mouthpiece away from the users mouth.

3,691,320
COIN STATION TIMING TEST ARRANGEMENT

James Arthur Grandle, Jr., Marlboro, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed May 26, 1971, Ser. No. 146,916
Int. Cl. H04m 3/22
U.S. Cl. 179—175.2 R 13 Claims

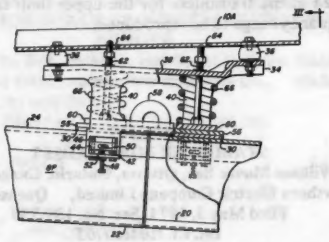


Test equipment connectable to a coin station for performing operational checks of the coin station apparatus is disclosed. The equipment is controlled by dialed signals and is capable of performing a timing test of the station coin relay. The equipment includes circuitry for indicating by tone signals or station ringing signals the test results.

3,691,321
POWER DISTRIBUTING SYSTEM

Joseph J. F. Rochefort, Montreal, Quebec, Canada, assignor to Quebec Cartier Mining Company

Filed April 14, 1971, Ser. No. 133,987
Int. Cl. B60m 1/24
U.S. Cl. 191—44.1 10 Claims



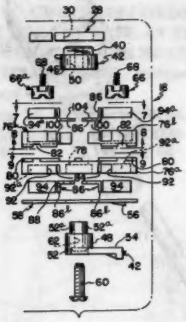
A power distributing system includes two bus bars arranged end to end and connected by means of an inverted U-shaped bracket. Holes in the bus bars are aligned with holes in the webs or legs of the bracket and a shear pin extends through each set of aligned holes. A contact conductor plate rests on a smooth conducting surface at the end of each bus bar and is urged against the smooth surface by means of a spring extending between the bottom of the top of the bracket and the top of a pressure plate resting on the contact plate. A bolt welded to the pressure plate extends through the top of the bracket and has a nut threaded on its top.

3,691,322
REVERSING SWITCH

Benjamin H. Matthews, Peninsula, Ohio, assignor to Lucerne Products, Inc., Northfield, Ohio

Filed Jan. 28, 1971, Ser. No. 110,515
Int. Cl. H01h 21/10, 21/66
U.S. Cl. 200—1 V 18 Claims

A reversing switch for mounting in an electrically powered tool, utensil or other motor driven device for selectively reversing the direction of rotation of an electric motor, such as for instance, a universal type motor. The switch comprises a compact switch body comprising a relatively stationary segment and a rotary segment with the stationary segment having a plurality of stationary contacts mounted thereon and the rotary segment having a plurality of contacts mounted thereon for rotation with the rotary segment, with the rotary segment being selectively movable into several operable positions,

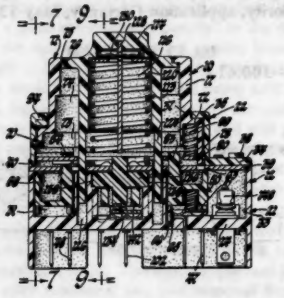


wherein in one of the positions of the rotary segment, the motor is driven in the reverse direction. The stationary segment is formed of an assembled lower sector and upper sector, each sector mounting a plurality of stationary contacts, said stationary contacts disposed in a common generally horizontal plane in the assembled condition.

3,691,323
COMBINATION LIGHTING SWITCH MECHANISM

Willis H. Anderson, and Willard E. Graddy, both of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed June 18, 1971, Ser. No. 154,423
Int. Cl. H01h 9/00, 15/10
U.S. Cl. 200—4 6 Claims



In a preferred form, this disclosure relates to a light switch assembly for controlling the operation of a vehicle lighting system having a park lighting mode, a normal headlamp lighting mode, and an expressway driving headlamp lighting mode. A first switch means includes a manually manipulatable first actuator means which is rotatably supported by housing means for movement between an off position and first and second on positions in which it effects the park and normal headlamp lighting modes, respectively. A second switch means includes a second manually manipulatable actuator for alternately effecting the normal headlamp driving mode and the expressway driving headlamp lighting mode when moved between first and second positions. The second switch means and the first actuator means carry cooperable means which prevent the second switch means from effecting the expressway driving headlamp lighting mode when the first actuator means is in either its off or first on position and which allows

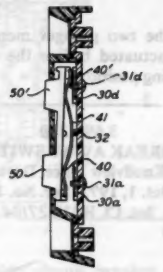
the second switch means to effect the expressway driving headlamp lighting mode when the first actuator is in its second on position. The cooperable means also actuates the second switch means to effect the normal headlamp lighting mode when the latter is in the expressway driving headlamp lighting mode and the first actuator means is rotated from its second on position toward its off position.

3,691,324

MULTIPLE CIRCUIT SWITCH WITH PIVOTED CONTACT ONLY ONE SWITCH OPERABLE AT A TIME

Siguard Brantingson, Short Hills, N.J., assignor to Brin Manufacturing Co., Inc., Newark, N.J.

Filed April 28, 1971, Ser. No. 138,142
Int. Cl. H01h *9/26, 21/64*
U.S. Cl. 200—5 E **3 Claims**



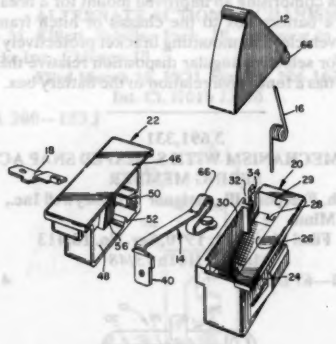
A multiple action contact switch, adapted to provide selective completion of a particular one of a multiplicity of switching circuits, by means of actuation of a portion of a unitary resilient element with a multiplicity of movable centers and corresponding fixed centers.

3,691,325

NON-SNAP ACTING ROCKER SWITCH

Bela Bognar, Bellingham, Mass., assignor to TRW, Inc., Cleveland, Ohio

Filed May 18, 1971, Ser. No. 144,498
Int. Cl. H01h *19/10, 21/00*
U.S. Cl. 200—6 C **2 Claims**



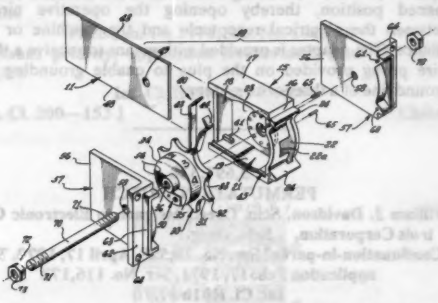
This is a cam actuated switch which has a two compartment housing and a plunger which has a shaft that is passed through the separation wall of the housing from one compartment to another. The shaft having a rat guard to prevent water from going from the plunger compartment to the contact compartment. The contact compartment houses the contacts and the end of the shaft has a cam portion extending therefrom adapted to engage against an arced portion of a spring contact.

3,691,326

ROTARY THUMBWHEEL SWITCH CONSTRUCTION

Abraham Grossman, and Eugene C. Lee, both of Northridge, Calif., assignors to Abraham Grossman, 4, Northridge, Calif.

Filed June 14, 1971, Ser. No. 152,665
Int. Cl. H01h *19/58, 21/78*
U.S. Cl. 200—11 TW **7 Claims**



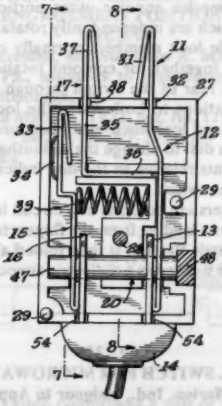
One or more rotary switch constructions or units, each including a plurality of interfitted component parts, arranged for rapid sequential production line assembly along a common assembly axis and held in assembly with housing portions under virtually uniform contact by a single shaft and external nut restraint means at opposite ends of the shaft. Each switch unit includes a switch housing having a sidewall and an open side opposite thereto, a printed circuit board positioned within said housing and selectively engageable by a circuit selecting brush carried on a rotatably mounted wheel having peripheral portions projecting through an opening in said housing for rotation of said wheel, means to selectively correlate rotation of the wheel with circuits to be selected, and a single shaft holding means extending through aligned ports in said end walls, sidewall, printed circuit board, and wheel.

3,691,327

CIRCUIT-CLOSING ADAPTER

Abraham Chesler, 59 Hanse Ave., Freeport, N.Y.

Filed April 22, 1971, Ser. No. 136,499
Int. Cl. H01h *27/00*
U.S. Cl. 200—42 R **8 Claims**



A circuit-closing adapter is provided with a continuous contact extending beyond one end of the adapter body and with a two-part contact, one part of which extends beyond said body, said contact-extensions being adapted for insertion into an electrical receptacle, said parts of the latter contact being nor-

mally spaced apart. A dielectric member is removably affixed to the body, the same both physically and electrically connecting the opposite ends of the contacts to the respective prongs of an electric plug that is attached to a machine or appliance. Key-operated lock means to move one of the parts of the two-part contact into direct electrical contact with the other end of said parts and to retain such contact while the key remains in the lock, is provided. Upon removal of the key from the lock, the moved contact part is released so the same may resume its spaced position, thereby opening the operative circuit between the electrical receptacle and the machine or appliance. The adapter is provided with means to receive a third wire prong provided on the plug to enable grounding the ground line of a three-wire system.

3,691,328

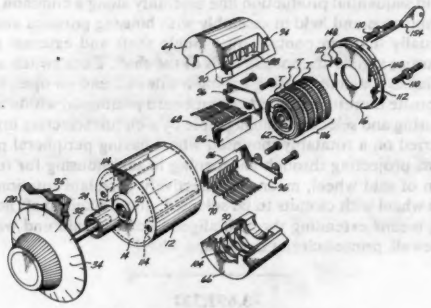
PERMUTATION SWITCH

William J. Davidson, Scio, Oreg., assignor to Electronic Controls Corporation, Scio, Oreg.

Continuation-in-part of Ser. No. 29,528, April 17, 1970. This application Feb. 17, 1971, Ser. No. 116,172

Int. Cl. H01h 27/10

U.S. Cl. 200—43 **14 Claims**



A plurality of tumblers are rotated by means made operable by selective movements of a combination dial to place conductive or dielectric peripheral regions of the tumblers in circuit making or breaking contact with spring contact fingers. The tumblers comprise annular outer portions surrounding inner portions which are independently rotatably mounted on a shaft. Releasable lock members normally connect the two tumbler portions together for conjoint rotation. A pin is insertable from the rear of the switch through openings in the outer tumbler portions to both move the lock member into release positions and lock such outer portions together. This permits use of the dial to change the azimuthal position of the peripheral segments relative to the dial indicia to change the combination of the switch.

The spring fingers are portions of a circuit board which also includes conductors leading from the fingers to terminals. The circuit board is made flat and is then folded and installed into openings for same formed in a dielectric support member.

3,691,329

CONTROL SWITCH FOR MICROWAVE OVEN

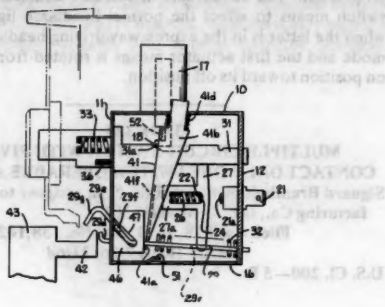
Wesley L. Ball, Marion, Ind., assignor to Appliance Manufacturing Company, Inc., Van Buren, Ind.

Filed Oct. 4, 1971, Ser. No. 186,332

Int. Cl. H01h 9/22

U.S. Cl. 200—50 A **7 Claims**

The switch structure disclosed coordinates the position of two plunger members, one manually actuated and one engaged by an oven door, so that a switch operated member is incrementally moved into switch-closing position by sequential depression of the two plunger members. Both plunger members must be actuated before the switch member can reach its switch closing position.



3,691,330

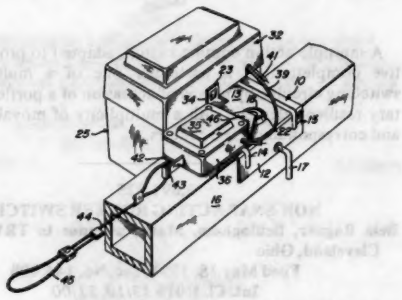
TRAILER BREAK AWAY SWITCH MOUNT

Irvin Hollander, 30 Knollview Place, Dayton, Ohio

Filed Oct. 1, 1971, Ser. No. 185,635

Int. Cl. H01h 27/04

U.S. Cl. 200—61.19 **10 Claims**



Apparatus comprising an improved mount for a break away switch and a battery box to the chassis or hitch frame of a trailer type vehicle. The mounting bracket protectively retains the switch for selective angular disposition relative the trailer vehicle and has a functional relation to the battery box.

3,691,331

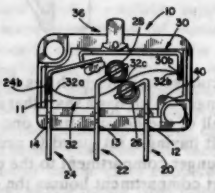
SWITCH MECHANISM WITH S-SHAPED SNAP ACTING SPRING MEMBER

John S. Resh, Freeport, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed March 11, 1970, Ser. No. 18,413

Int. Cl. H01h 13/48

U.S. Cl. 200—67 DB **4 Claims**



A snap acting switch arrangement having a normally flat elongated spring member supported in compression to either

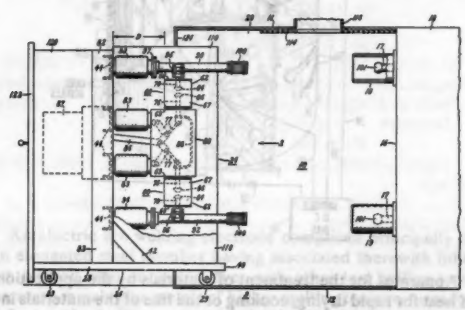
side of a pair of centrally located, spaced stop members to provide an S-shaped configuration whereby movement of one of the extremities thereof causes a change in the curvature, but not a reversal, of the S-shape and results in snap movement of the spring member from one stop member to the other.

3,691,332

VACUUM-TYPE ELECTRIC SWITCHGEAR

William T. Sharp, Philadelphia, Pa., assignor to General Electric Company

Filed Nov. 10, 1970, Ser. No. 88,503
Int. Cl. H01h 33/66
U.S. Cl. 200—144 B 5 Claims



Discloses a movable circuit breaker unit for polyphase metal-clad switchgear comprising a movable truck including a horizontally-extending base and a vertically-extending frame projecting upwardly from the base. In each phase of the circuit breaker, there are two vacuum interrupters mounted in vertically-spaced, axially aligned relationship on opposite sides of a casing that is supported on said framework by horizontally extending insulating structure. Horizontally extending studs at the outer ends of the two interrupters are supported on the frame by suitable insulators and are electrically connected to the interrupters by flexible braid. The studs project from the vacuum interrupters toward the rear end of the movable circuit breaker unit, and the interrupters are displaced by a substantial distance from the frame toward said rear end.

3,691,333

ALTERNATE ACTION MECHANISM

Phillip M. Elliott, Schiller Park, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed March 19, 1971, Ser. No. 126,162
Int. Cl. H01h 13/56
U.S. Cl. 200—153 J 6 Claims

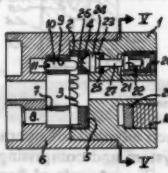
The present invention relates to a new improved alternate action mechanism for control devices, such as switches, which utilizes a pawl mounted for free rotation on an actuator and for operative association with camming surfaces formed in an associated hollow casing. The camming surfaces act to partially rotate the pawl on an initial downward stroke of the actuator to such an extent that the pawl cooperates with the camming surfaces to preclude total return of the actuator without subsequent reciprocal motion of the actuator further rotating the pawl. Contiguous opposite sides of a pawl tooth are engaged by a shoulder portion of said camming surfaces to prevent return.

3,691,334

PUSH-BUTTON SWITCH

Olindo Baruffa, 81, avenue du Lignon, Aire-Geneva, Switzerland

Filed Jan. 14, 1971, Ser. No. 106,338
Claims priority, application Switzerland, Jan. 15, 1970, 525/70
Int. Cl. H01h 13/58, 9/04
U.S. Cl. 200—153 J 7 Claims



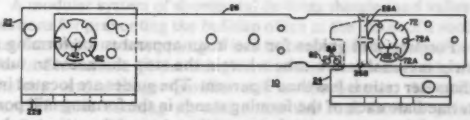
The switch has a body containing a rotary disc, restrained from axial movement, with dog-teeth on one face and hollows of alternating depth on the other face. A fluid-tight push-button on the side of the body rotates the disc step-by-step by means of a hinged oscillating lever bearing a pawl cooperating with the dog-teeth. A piston plunger is elastically slidable in a bore to cooperate with the hollows at one end and with electrical contact studs at the other end. The disc and other members have a central cavity enabling the passage of a mechanical part, light-beam or a fluid in sealed manner through the switch. The switch can be easily positioned in the tubular casing of an electric motor and axially adjacent to the motor without increasing the diameter of the casing.

3,691,335

KNIFE BLADE CONTACT ASSEMBLY WITH IMPROVED CONTACT ENGAGEMENT POSITION RETAINING MEANS

Charles M. Cleaveland, and Stanislaw A. Milianowicz, both of Monroeville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed March 1, 1971, Ser. No. 119,557
Int. Cl. H01h 1/50, 21/54
U.S. Cl. 200—162 10 Claims



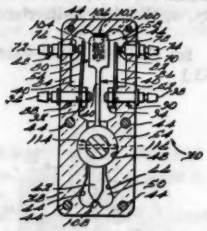
An electrical switch comprising a pair of generally parallel spaced blades pivotally mounted on a hinge contact member and rotatably movable to engage a break contact member or jaw which is spaced away from the hinge contact member. A biasing means is mounted on the blades adjacent to the break contact member to bias the blades toward one another.

3,691,336

VEHICLE LEVELING SYSTEM SWITCH HAVING VIBRATING PREVENTING MEANS

William W. Higginbotham, Monroe, Mich., assignor to Monroe Auto Equipment Co., Monroe, Mich.

Filed Jan. 8, 1968, Ser. No. 722,505
Int. Cl. H01h 1/50
U.S. Cl. 200—166 H 20 Claims



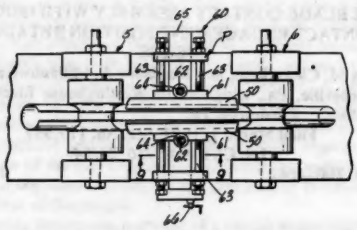
An electrical switch adapted for operative association with a vehicle leveling system and comprising an exterior housing defining a fluid chamber. A pair of fixed terminal elements within the chamber each of which is cooperable with a movable terminal element, a pivotable actuating member movable toward and away from the movable terminal elements for biasing the same into engagement with the fixed terminal elements in order to complete an electrical circuit therebetween, and means including a quantity of fluid within the chamber for resisting movement of the actuating member therein.

3,691,337

FORMING MILL GUIDES

Jack Morris, Orange, Conn., assignor to Olin Corporation,

Filed May 24, 1971, Ser. No. 146,138
Int. Cl. H05b 5/00
U.S. Cl. 219—8.5 13 Claims



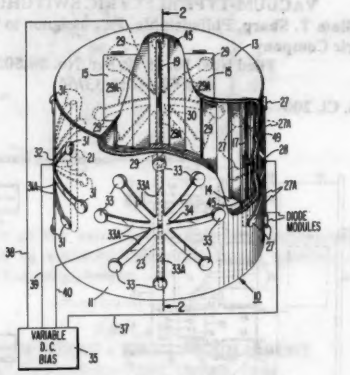
Forming mill guides for use in an apparatus for forming a strip material into a tube wherein the strip thickness to tube diameter ratio is less than 3 percent. The guides are located intermediate each of the forming stands in the forming mill portion of the apparatus and prevent the edges of the strip or tube from popping out or buckling. The guides generally comprise a member having a concave face which is contoured to contact and support the strip or tube between each of the respective forming stands. The apparatus also includes means for aligning the guides with the strip or tube and is particularly applicable to the formation of non-ferrous alloy tubing, such as copper or copper base alloys. The guides are preferably formed of a plastic material, such as nylon.

3,691,338

SOLID STATE MICROWAVE HEATING APPARATUS

Kern KoNan Chang, Princeton, N.J., assignor to RCA Corporation

Filed Sept. 30, 1971, Ser. No. 185,067
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 7 Claims



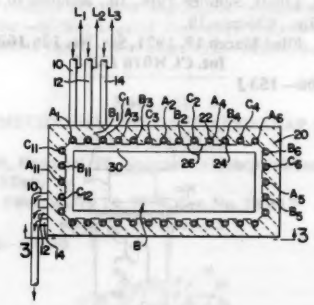
Apparatus for the treatment of materials by the application of heat for rapid drying, cooking or the like of the materials includes an enclosure having a plurality of solid state microwave generators generating signals at microwave frequencies. The generators are heat sinked to the inner wall of the enclosure and are coupled to at least one dipole antenna radiating into the enclosure for providing microwave heating in the enclosure.

3,691,339

MULTI-PHASE INDUCTION HEATING DEVICE

John F. Cachat, Cleveland, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed May 7, 1971, Ser. No. 141,676
Int. Cl. H05b 9/02
U.S. Cl. 219—10.57 1 Claim



An induction heating device comprising a frame generally defining a loading receiving chamber and at least three overlapping, electrically insulated, induction heating coils adapted to be magnetically coupled with a load within the chamber. Each of the induction heating coils has a series of repeating loops comprising two spaced, generally parallel legs, with the plane defined by the parallel legs of each loop and between these legs being generally exterior of the chamber.

3,691,340

WELDING ELECTRODE WITH LITHIUM SHIELDING METAL

George G. Landis, Cleveland; John M. Parks, Solon, and Kenneth L. Brown, South Euclid, all of Ohio, assignors to The Lincoln Electric Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 618,979, Feb. 27, 1967, abandoned, Continuation-in-part of Ser. No. 493,615, Sept. 24, 1965, abandoned, Continuation-in-part of Ser. No. 289,871, June 24, 1963, abandoned. This application Jan. 13, 1970, Ser. No. 2,643

Int. Cl. B23k *35/22*

U.S. Cl. 219—146 12 Claims

An electric arc welding electrode comprised principally of an elongated steel member having associated therewith lithium alloyed with or coated over with other low boiling temperature metals plus metals of higher melting temperatures for delaying the boiling action of the low boiling temperature metals. The member may be striated and these metals fill the striations.

3,691,341

IMPROVEMENTS TO THE CONTROLLING OF FOCUSSING OF ELECTRONIC BOMBARDMENT

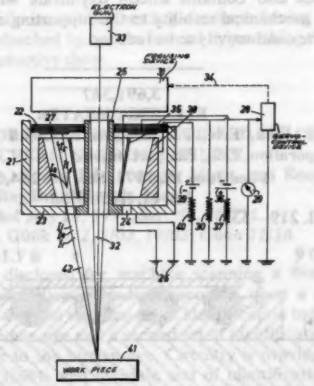
Jean-Pierre Louis Roiron, Seyssinet Isere, and Guy Loyau, Mont-Pre Chambord, both of France, assignors to Societe Anonyme, Societe Alsacienne De Constructions Atomiques, De Telecommunications Et D'Electronique, "Alcatel", Paris, France

Filed Aug. 13, 1969, Ser. No. 849,848

Claims priority, application France, Aug. 14, 1968, 681631

Int. Cl. B23k *15/00*

U.S. Cl. 219—121 EM 6 Claims



Optimum focusing of an electron beam on a metal part more particularly in electron beam welding is obtained by intercepting the ionic and/or electronic currents radiating from the metal part under the influence of the impact of the beam, and controlling the focusing of the electron beam as a function of the currents to bring the currents at a minimum.

To this end, an electrically conducting ring is arranged coaxially with the electron beam which is focused by means of e.g., an electromagnetic coil. The ring is arranged between the metal part and the focusing coil, and is part of a biasing circuit adapted to impart a given polarity to the ring. Current passing through the ring is measured and a servo-control controls the focusing to reduce the current to a minimum. At least one diaphragm or mask is arranged around the electron beam between the focusing coil and the ring, and a grid having a polarity opposed to that of the ring is arranged between the metal part and the ring.

3,691,342

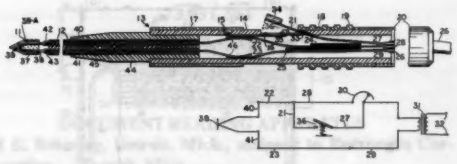
ELECTRIC SOLDERING IRONS

Walter W. Giles, and Norman W. Madden, both of 2631 Locksley Place, Los Angeles, Calif.

Filed March 9, 1970, Ser. No. 17,533

Int. Cl. B23k *3/04*; H05b *1/00*

U.S. Cl. 219—233 2 Claims



An improved electric soldering iron of a type operable by one hand and adapted for working in restricted places with (1) safety to adjacent material and (2) minimal transference of heat from a heating element to the handle of the device, these aims being achieved by a specially structured tube of very small diameter and great length extended from the handle of the device and attached at the forward end to the soldering tip, with ventilating means being provided adjacent the tip to further reduce the transfer of heat from the tip to the handle.

3,691,343

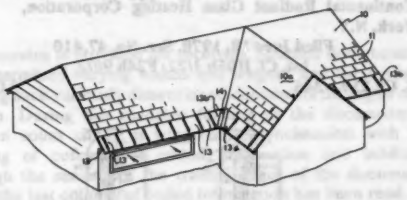
MODULAR SYSTEM OF ROOF HEATER SHINGLES

Victor B. Norman, 12 Barringer Rd., Ilion, N.Y.

Filed Sept. 23, 1971, Ser. No. 183,086

Int. Cl. H05b *1/00*

U.S. Cl. 219—213 4 Claims



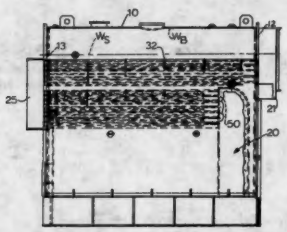
A modular system of sheetmetal de-icing shingles and valley sections for preventing the buildup of ice at the eaves of a roof has fine heater wires arranged in a trapezoid configuration on the under surface of the shingles, the shorter parallel side at the top, and a longer parallel side at the bottom, the non-parallel sides running up and down the roof from a point receiving heat from the building to a point adjacent the roof's edge. The wires are covered on the undersurface with a first layer of adhesive coated metal foil tape and a second layer of material nonconductive to heat and electricity. The shingles at their roof-end edge are bent back on themselves for gripping electrical harness clips and then formed in a depending drip edge and harness concealing flange. The electrical supply wires covered with protective insulation in the harness are supplied attached to each shingle and of such length as to

reach an appropriate point in the next shingle. Weatherproof, snap action, wire splicers are supplied for the ends of each wire for quick electrical connection, all wiring being concealed behind the drip flange and supported by clips. The shingles are locked to one another at each side and secured together by rivets to assure good ground connections. Shingles are provided for each end of a row furnished with connections for a ground wire and the connection to the house circuit is furnished with an indicator light and the wiring supplied with a thermostatic switch and suitable fuses.

3,691,344
ELECTRICALLY CONVERTED FIR TUBE BOILER AND METHOD

John A. Hoffman, 4010 Camelot Dr., Raleigh, N.C.

Filed July 6, 1971, Ser. No. 159,960
Int. Cl. F24h *1/00*
U.S. Cl. 219—321 8 Claims

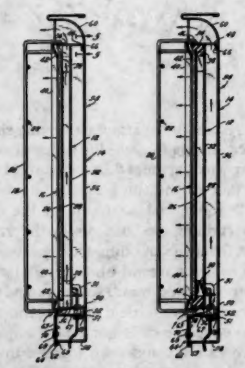


A modified fire tube boiler construction and method enables a conventional fossil fuel fired fire tube boiler to operate with electrical heating for the purpose of heating water and producing low and high pressure steam. The construction and method involve replacing a plurality of selected fire tubes with a like number of elongated electrical immersion heaters supported by heater support rods between the front and rear tube sheets and controlling the heaters selectively and electrically for temperature, pressure and water level sensing.

3,691,345
RADIANT HEATER

Robert L. Needham, Bayside, N.Y., and Continental Radiant Glass Heating Corporation, New York, N.Y., assignors to Continental Radiant Glass Heating Corporation, New York, N.Y.

Filed June 18, 1970, Ser. No. 47,410
Int. Cl. H05b *3/22*; F24h *9/02*
U.S. Cl. 219—345 3 Claims

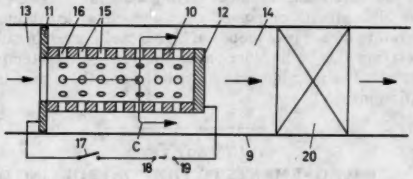


A radiant heater includes means for delivery of heat by convection as well as radiation. A heater subassembly is formed by a tempered glass electric radiant heating panel supported in spaced relation to a mounting panel by flanges extending forwardly from the top and bottom margins of the mounting panel. The heater subassembly is suspended within a main frame member in spaced relation to the walls thereof by a plurality of spaced flange members extending rearwardly from the top margin of the mounting panel and engaged with projections stuck out from the main frame member. A plurality of spaced, articulated, rearwardly extending flange members are provided at the bottom margin of the mounting panel to properly position the subassembly relative to the main frame member. The arrangement allows first convection air flow path between the heater panel and the mounting panel and a second convection air flow path between the mounting panel and the main frame member.

3,691,346
ELECTRICALLY HEATED CATALYTIC AIR PURIFIER

Mogens Dyre, Nordborg, and Jorgen Abildtrup, Augustenborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed July 13, 1970, Ser. No. 54,485
Claims priority, application Germany, July 3, 1969, P 19 33 826.2
Int. Cl. F24h *3/04*; H01b *1/00*; B01j *9/04*
U.S. Cl. 219—374 1 Claim

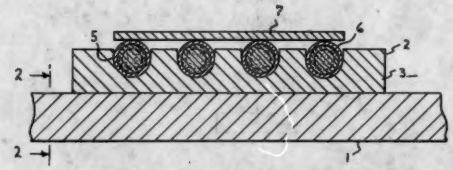


The invention relates to air treatment equipment for the removal of impurities from the air such as odorous substances and bacterial spores. The equipment includes a support member made of silicon carbide, preferably beta silicon carbide, which gives it good thermal conductivity and allows it to operate as an electrical heating element. The support member has air passages through which air to be purified passes, the walls of the air passages being coated with a catalyst material such as platinum. In a preferred embodiment the support member also contains silicon oxynitride which imparts a better mechanical stability to the supporting element and allows the conductivity to be reduced.

3,691,347
ELECTRIC HEATER

John J. Finn, Erie, Pa., assignor to Glenn Electric Heater Corporation, Erie, Pa., part interest

Filed June 18, 1971, Ser. No. 154,328
Int. Cl. H05b *3/58*
U.S. Cl. 219—535 3 Claims



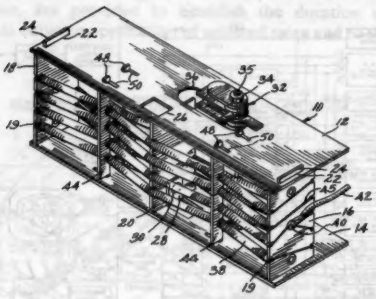
An electric heater having a ductile iron heat transfer body adapted to conform to the surface to be heated. The heater operates at temperatures up to 1,100°F and at a higher watt density input than comparable heaters with aluminum heat transfer bodies.

3,691,348

HEATING ELEMENT ASSEMBLY

Raymond W. Kunz, Monroe, Conn., assignor to General Electric Company

Filed Oct. 6, 1971, Ser. No. 186,959
Int. Cl. H05b 3/06
U.S. Cl. 219—532 10 Claims



An electrical resistance heating element assembly for use in electric portable space heaters having a support structure comprising a top panel and a bottom panel in spaced relationship and end panels extending therebetween with outwardly directed open-ended vertically spaced peripheral notches. An electrical resistance heating element is wrapped around the end panels and seated in the end panel notches with the heating element retained in its proper position by retainer members having inwardly directed open-ended vertically spaced notches that engage the heating element between the end panels and depress the heating element inwardly.

3,691,349

ELECTRICAL HEATING SHEET WITH SERIES OF EYELETS CONNECTIONS

Donald MacColl, Ardrossan, and Hugh O'Pray, Stevenston, both of Scotland, assignors to Imperial Chemical Industries Limited, London, England

Filed Feb. 16, 1971, Ser. No. 115,846
Claims priority, application Great Britain, March 9, 1970, 11,179/70
Int. Cl. H05b 3/34
U.S. Cl. 219—549 2 Claims

Conductive silicone rubber heating elements having metal foil electrodes attached by eyelets formed by punching the foil through the conductive sheet.

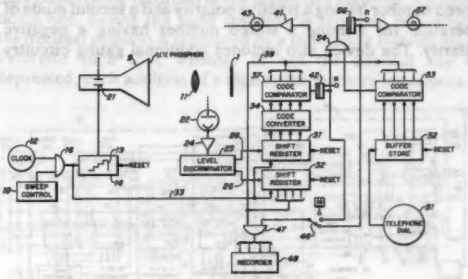
3,691,350

SYSTEM FOR VERIFYING AUTHORIZED USE OF A CREDIT CARD OR THE LIKE

Roger J. Kuhns, Tower Rd., Lincoln, Mass., and Robert L. Nathens, 36 Stag Dr., Billericia, Mass.

Filed July 21, 1970, Ser. No. 56,771
Int. Cl. G06k 7/12, 5/02, 19/02; G06n 21/36
U.S. Cl. 235—61.7 B 9 Claims

A system is disclosed for machine scanning a first and second set of identification indicia recorded upon a credit card or the like wherein said first set of identification indicia is visible to the human eye and a second set of identification indicia is invisible to the human eye. Circuitry is provided for comparing the visible and invisible sets of identification indicia to determine whether or not they correspond, lack of correspondence thereof indicating the possible presence of a counterfeited card. Further circuitry is provided for having a bank teller, for example, manually insert the card holder's identification number, which is orally transmitted to the teller by the card holder, into the system whereby the manually inserted identification number is compared with the machine scanned coding associated with the card. If all three codes correspond, it is extremely unlikely that unauthorized use of the



credit card is occurring or that coded indicia has been misread by the scanner.

3,691,351

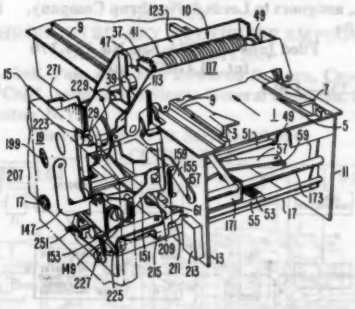
Patent Not Issued For This Number

3,691,352

DOCUMENT READING APPARATUS

Earl E. Brinning, Detroit, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed June 9, 1971, Ser. No. 151,174
Int. Cl. G06k 7/015
U.S. Cl. 235—61.11 C 16 Claims



Apparatus is provided for receiving punched documents of predetermined varying widths and lengths, and for readably feeding such variously dimensioned documents through a read station. During this readable feeding of the documents, a column count circuit is triggered in synchronism with the reading of columns of coded information and inhibited through the sensing of the trailing edges of the documents when the last column of coded information has been read. By this means embossed areas that may be present on certain of the documents following the last column of coded information may be fed through the read station without the risk of false reading resulting from spurious signals generated by such embossed areas.

3,691,353

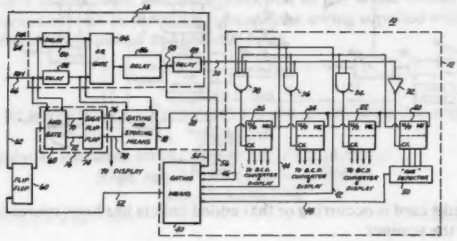
MULTIMODE COUNTING DEVICE

Jimmie A. Michaud, Dayton, Ohio, assignor to The Bendix Corporation

Filed Dec. 14, 1970, Ser. No. 97,648
Int. Cl. H03k 21/02; G06m 3/14
U.S. Cl. 235—92 EV 6 Claims

A multimode counting device that utilizes number incrementing and number decrementing signals to change the value

of a stored number. The counting device includes a storage register and switching or gating circuitry that causes the device to switch between a first mode of operation for altering a stored number having a positive polarity and a second mode of operation for altering a stored number having a negative polarity. The device also includes additional gating circuitry



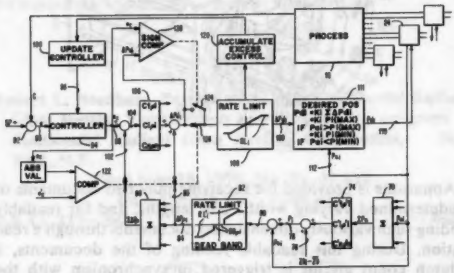
responsive to the stored number and to signals in transmission to the storage register to initiate a change in the operating mode when the stored number is unity and a signal that will cause that number to become zero is in transmission to that register instead of waiting until the stored number actually reaches zero.

3,691,354

SYSTEM FOR CONTROLLING A SINGLE CONTROL VARIABLE BY PROPORTIONING A PLURALITY OF RELATED MANIPULATED VARIABLES

Thomas A. Green, Roslyn, and Charles W. Ross, Hatboro, both of Pa., assignors to Leeds & Northrup Company, Philadelphia, Pa.

Filed June 18, 1971, Ser. No. 154,370
Int. Cl. G05b *15/02*
U.S. Cl. 235—150.1 **8 Claims**



A digital control system determines a control signal in accordance with proportional and integral control responses. The control signal is proportioned among a plurality of final control elements so as to modify related manipulated variables. The values of the manipulated variables are summed and that sum is similarly proportioned. The resulting individual portions are then compared with the value of the associated manipulated variable and the difference is added to the corresponding proportions of the control signal to correct the divergence of the response of the control elements from the desired proportioned response.

3,691,355

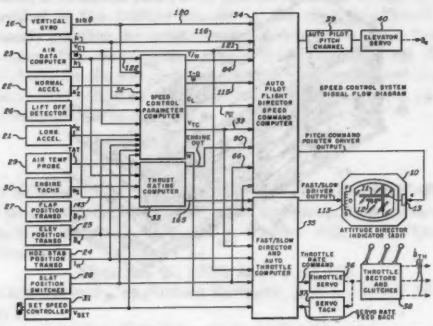
Patent Not Issued For This Number

3,691,356

SPEED COMMAND AND THROTTLE CONTROL SYSTEM FOR AIRCRAFT

Harry Miller, Scottsdale, Ariz., assignor to Sperry Rand Corporation

Filed Dec. 10, 1970, Ser. No. 96,796
Int. Cl. G06g *7/78*; B64c *13/50*
U.S. Cl. 235—150.22 **31 Claims**



Aircraft control apparatus for providing pitch guidance to the pilot during the takeoff acceleration phase between rotation airspeed and steady climbing speed in accordance with Federal Airworthiness Standards for takeoff safety speeds. The steady climbing target speed is determined from computed values of actual coefficient of lift of the aircraft compared to a reference value of coefficient of lift which is programmed in accordance with the number of operating engines, existing thrust to weight ratio, flap position, and leading edge slat extension. The pitch guidance is derived from a control equation which generates a regulating signal for driving the pitch command pointer of an attitude flight director display. Pitch guidance is provided for the pushover acceleration mode during which the aircraft's takeoff flap-slat configuration is retracted and the aircraft is stabilized on a new climb path at a preset airspeed. Pitch guidance is also provided for a missed approach procedure. Further provision is made for the automatic or manual control of engine throttles to maintain an optimum thrust condition or to maintain a pilot set airspeed, including override means whereby a minimum safe speed based on flap position and computed gross weight will override the selected speed if it is below the computed minimum. An additional override is provided to inhibit pilot selection of airspeeds which are above structural limitations of the flaps.

The system requires speed control parameters which are computed by apparatus which provides a measure of the angle of attack and coefficient of lift of an aircraft without external probes or vanes, which measure is derived from computations involving measurements of aircraft longitudinal acceleration, normal acceleration, vertical speed, calibrated airspeed, Mach number, and positions of the movable aerodynamic surfaces which affect the coefficient of lift of an airplane. Supplementary outputs of the computer are signals proportional to acceleration along the flight path, thrust over weight ratio, gross weight of the airplane, potential flight path angle of the airplane, and actual flight path angle.

3,691,357

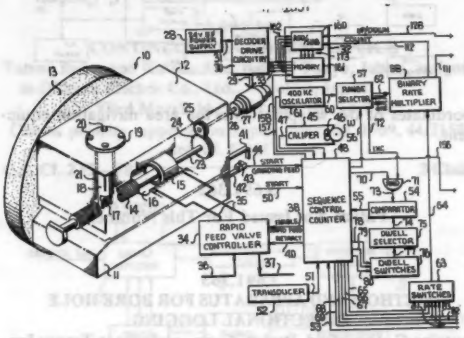
POSITIONING CONTROL SYSTEM HAVING MEMORY FOR A MACHINE TOOL

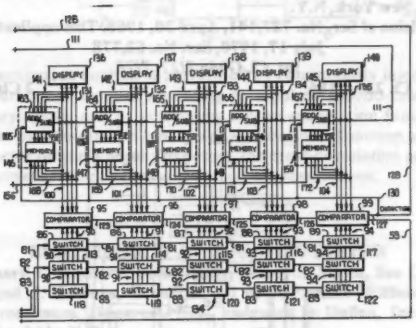
Michael D. McIntosh, Greencastle, Pa., assignor to Litton Industries, Inc., Beverly Hills, Calif.

Filed Sept. 21, 1970, Ser. No. 73,739
Int. Cl. G06f *15/46*
U.S. Cl. 235—151.11 **20 Claims**

A feed positioning control system having a non-volatile memory for a machine tool is described which utilizes an electro-hydraulic pulse motor to move a grinding wheel support

predetermined distances during a grinding operation. A control counter is arranged, via rate selecting switches to select pulses of various predetermined pulse repetition rates for controlling the rates at which the electro-hydraulic pulse motor moves during a grinding operation. End point selecting switches and comparators are provided for determining the distance moved by the support during a grinding operation to signal the control counter to change rates or to select a dwell period. Dwell selecting switches, responsive to the control counter, are provided to establish the duration of dwell periods between application of selected rates and to signal the





control counter at the end of each dwell period, including a spark out period at the end of a grinding operation. The comparators are connected to pulse counting devices, which are responsive to the pulse input to the electro-hydraulic pulse motor. The pulse counting devices comprise five binary coded decimal up/down counters each having four-bit output. Each counter contains a distinct non-volatile memory device, each of which has four magnetic core storage elements, one for each bit. The system includes means for retrieving the data stored in the memory elements prior to shut will re-establish the output of the updown counters to the same point, subsequent to the power failure.

3,691,358

DECIMAL-POINT INDICATING SYSTEM, ESPECIALLY FOR ELECTRONIC CALCULATOR

Stefan Christov Angelov; Snejanka Vladimirova Hristova, and Srebryn Yovtchev Srebrev, all of Sofia, Bulgaria, assignors to Zentralen Institut Po Istchislitelna Technika, Sofia, Bulgaria

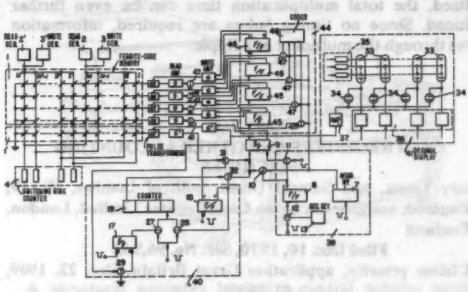
Continuation-in-part of Ser. No. 672,500, Oct. 3, 1967, Pat. No. 3,548,180. This application Aug. 31, 1970, Ser. No. 68,191

Claims priority, application Bulgaria, Oct. 4, 1966, I-1,175

Int. Cl. G06f 7/48

U.S. Cl. 235—159 **9 Claims**

An electronic calculator or computer with a magnetic-core memory having a number of columns corresponding to the number of digits which may be manipulated and four lines connected with a binary encoder. The latter transforms the numerical value into a binary code for each digit with these binary codes being recorded in the respective columns. An additional line, having the same columns, is provided into which the decimal position is registered by a flip-flop or bistable multivibrator such that, whether or not the decimal key is depressed, each addition of a digit in the memory introduces a



decimal point on the additional line while erasing all previous decimal-points. When the decimal point key is depressed, e.g. to introduce a fractional number, the multivibrator is controlled by controlled gates to enable the decimal point to shift with the last digit order recorded prior to depression of the decimal point. Decimal-point indication uses glow lamps between the numeral-display or counter tubes, the glow lamp associated with the digit of the corresponding column being illuminated when the particular column is "read."

3,691,359

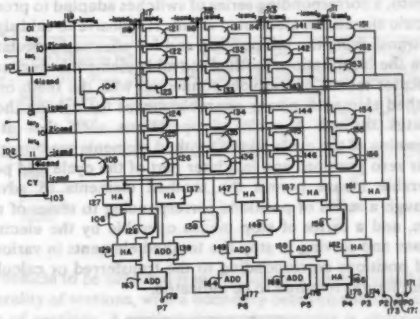
ASYNCHRONOUS BINARY MULTIPLIER EMPLOYING CARRY-SAVE ADDITION

Harold R. Dell, Palo Alto, and Edwardo D. Lara, Cupertino, both of Calif., assignors to Singer-General Precision, Inc., Binghamton, N.Y.

Filed July 28, 1970, Ser. No. 58,956

Int. Cl. G06f 7/54

U.S. Cl. 235—164 **9 Claims**



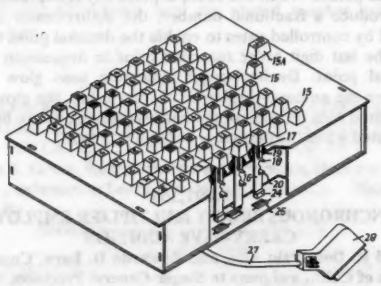
An arithmetic unit for accomplishing the multiplication of two binary numbers at high speeds is described herein. By utilizing a plurality of gates connected in successive stages, the combinations of individual digits of a multiplicand and a multiplier to produce the product thereof is accomplished. The gates of the successive stages are so connected as to shift the partial product produced at each stage by one digit to the right, the least significant digit of that stage being shifted out as a product digit. In the simplest case, there will be as many stages as there are multiplier digits. However, a modification of the basic system provides for the simultaneous combination of the multiplicand with a plurality of individual multiplier digits to reduce the number of stages required in the apparatus. Each stage produces carries which are added in by

means of inter-spaced adders or half-adders at each stage. No timing signals are required since this apparatus operates as an asynchronous device. Therefore, each stage occupies only the time required to transfer the function through it, and the total multiplication process is speeded up thereby. The modification which permits simultaneous combination of a plurality of multiplier digits with the multiplicand shortens the required multiplication time even further, and if special encoders are utilized, the total multiplication time can be even further reduced. Since no timing pulses are required, information flows through the multiplier as a ripple.

3,691,360
CASH REGISTERS AND OTHER ACCOUNTING MACHINES

Henry Gross, and Samuel Gross, both of London, W. 10, England, assignors to Gross Cash Register Limited, London, England

Filed Dec. 10, 1970, Ser. No. 96,942
Claims priority, application Great Britain, Dec. 22, 1969, 62226/69
Int. Cl. G06f *3/12*; G06k *15/06*
U.S. Cl. 235—168 6 Claims



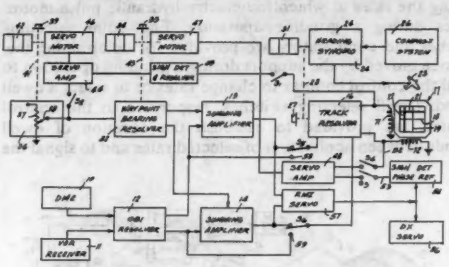
According to the invention we provide an apparatus for calculating and indicating information data applied thereto comprising keyboard or other input means, means including a series of elements adapted to receive information applied thereto, a corresponding series of switches adapted to produce electric signals, an electronic means responsive to said signals for transferring the information and for effecting calculations from the information; toothed movable elements; mechanical indicator means operatively connected with the teeth on the toothed elements; power operable means for driving the apparatus through a cycle of operations such that at the beginning of the cycle all the toothed elements are brought to their zero positions and in a later part of the cycle said power operable means permit the toothed elements to advance through a series of positions corresponding to series of numbers, and a series of stop means operable by the electronic means and serving to stop the toothed elements in various of said positions corresponding to the transferred or calculated result figures required to be indicated.

3,691,361
AREA NAVIGATION SYSTEM FOR AUTOMATICALLY SELECTING WAYPOINTS ON THE TRACK AND LYING AT A RIGHT ANGLE FROM A MASTER STATION

Carl Stuart Perkins, Oak Brook, Ill., assignor to Butler National Corporation, Oak Brook, Ill.

Filed Nov. 13, 1970, Ser. No. 89,364
Int. Cl. G06g *7/78*
U.S. Cl. 235—150.27 7 Claims

An area navigation system which provides for the automatic selection of waypoints on the track at a point which is at right angles from the track to the master station. Means are provided for determining the distance from the aircraft to the waypoint and the distance of the waypoint from the master station and these signals are utilized to automatically set the



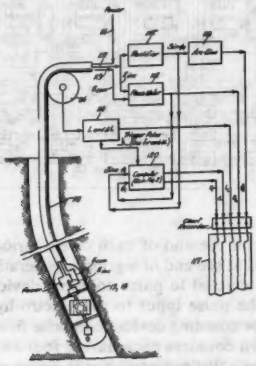
coordinates of the waypoint into the area navigation equipment.

3,691,362
Patent Not Issued For This Number

3,691,363
METHOD AND APPARATUS FOR BORE HOLE DIRECTIONAL LOGGING

Fontaine C. Armistead, Darien, Conn., assignor to Texaco Inc., New York, N.Y.

Division of Ser. No. 727,141, April 30, 1968. This application July 17, 1970, Ser. No. 62,778
Int. Cl. G06g *7/22*, *7/78*
U.S. Cl. 235—186 2 Claims



A method and apparatus for borehole directional logging. The apparatus includes first and second coils. The first coil is adapted for rotation about an axis aligned with the longitudinal axis of the borehole. A gimbal mounted magnetic field producing coil is provided for generating a first magnetic field of predetermined direction with respect to the vertical in the space occupied by the first coil whereby an alternating signal is induced therein representative of the inclination angle of the borehole. The second coil is adapted for rotation at the same rate as the first coil while being subjected to a second magnetic field having at least a component of known azimuth direction, thereby generating an alternating signal in the second coil, the phase angle of which, with respect to the first coil signal is representative of the azimuth angle of the borehole. A further embodiment provides computing apparatus for determining the location of a selected segment of the borehole at any depth including mathematical and trigonometric function operators for generating signals representative of the incremental changes of the borehole position and of the corresponding incremental length seg-

ments along the borehole. Also included are computing elements for summing the latter signals thereby obtaining the location of the borehole at any depth. The method includes generating first and second signals representative of the borehole inclination and azimuth, respectively, and in response thereto generating signals of the incremental changes in the location of successive segments of the borehole correlated with a signal representation of the length of said segments, and generating signals representative of the borehole location along its length by summing the latter signals.

3,691,364

CONTINUOUS ANALYZING DEVICE

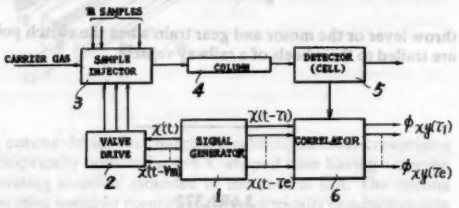
Tatsuo Baba, and Katsuo Abe, both of Tokyo, Japan, assignors to Ohkura Electric Co., Ltd., Tokyo, Japan

Filed March 16, 1970, Ser. No. 19,779

Claims priority, application Japan, Mar. 20, 1969, 44/21506

Int. Cl. G06f 15/34

U.S. Cl. 235—181 **3 Claims**



Continuous analysis is performed by continuously injecting a plurality of samples according to a pulsed pseudo-random binary signal, and by computing a cross-correlation function of the pseudo-random binary signal or its linear function and a detector output whereby to detect, the cross-correlation as the response corresponding to the result of measurement.

3,691,365

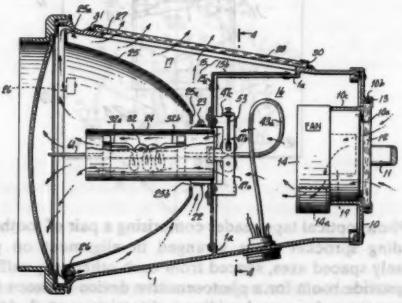
ELECTRONIC FLASH LIGHTING SYSTEM

Richard I. Sequerra, Forest Hills; Sidney S. Smith, Sea Cliff; Fred J. Assenza, Brooklyn, all of N.Y., and William H. Greenbaum, Demerest, N.J., assignors to Unilux, Inc., Woodside, N.Y.

Filed Aug. 11, 1970, Ser. No. 62,811

Int. Cl. G03b 15/02

U.S. Cl. 240—1.3 **17 Claims**



Electronic flash lighting system with helical flash tube and forced draft air cooling system producing a flow of air closely confined to a region adjacent the surfaces of the flash tube. This provides a high rate of heat dissipation and hence allows a high rate of flash repetition and/or high average power. The flash tube is mounted for adjustable movement with respect to a lens and reflector system so as to change the focus of the light beam passing through the lens.

3,691,366

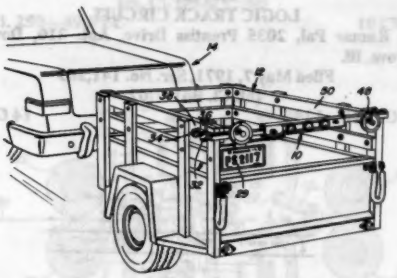
TELESCOPING LIGHT BAR

Philip M. Spreuer, Rt. 1, La Grange, Ind.

Filed Sept. 23, 1970, Ser. No. 74,720

Int. Cl. B60q 7/00

U.S. Cl. 240—8.3 **8 Claims**



A structural assembly having a central tubular section telescopingly mounting two longitudinally extending members that are adjusted for attachment at the outward ends thereof to a vehicle. Coiled power cords are received in the assembly and furnish selective energization for various lights fastened to the tubular section and the telescoping members. The coiled power cords facilitate extension and retraction of the telescoping members without snagging.

3,691,367

Patent Not Issued For This Number

3,691,368

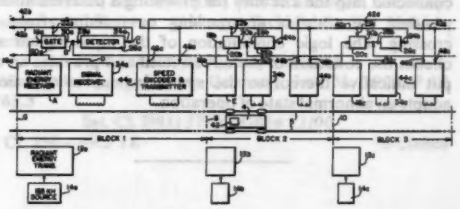
VEHICLE DETECTION SYSTEM AND METHOD

Robert C. Hoyler, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 3, 1970, Ser. No. 94,845

Int. Cl. B61l 21/06

U.S. Cl. 246—29 R **5 Claims**



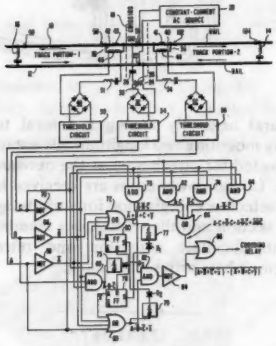
A vehicle to be detected is moved along a track divided into a plurality of sections, with a boundary between each adjacent pairs of sections. A radiant energy transmitter is situated at one side of the track at each such boundary, and a radiant energy receiver is situated on the other side of the track for receiving the transmitted radiant energy. The passing of a train through a boundary blocks the transmission of the radiant energy from the transmitter to the latter receiver. A radio (high frequency) signal receiving means is situated at each boundary adjacent the radiant energy receiver, for receiving a radio signal from a train carried antenna each time a train passes the boundary. In response to the sensing of radiant energy at a given boundary, concurrent with the reception of a radio signal from a given train passing the succeeding boundary, a signal is generated for controlling the speed of another train in at least the section preceding the given boundary.

3,691,369
Patent Not Issued For This Number

3,691,370
LOGIC TRACK CIRCUIT

Ajoy Kumar Pal, 2035 Prentiss Drive, Apt. 210, Downers Grove, Ill.

Filed May 7, 1971, Ser. No. 141,269
Int. Cl. B61l 1/02
U.S. Cl. 246—125 **14 Claims**



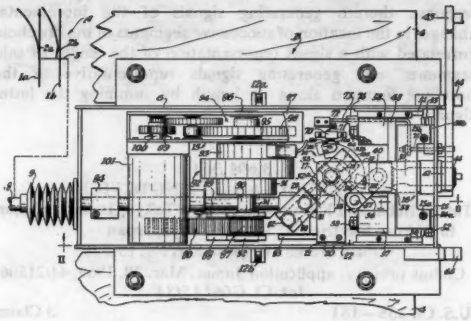
A binary logic circuit responsive to three binary logic input signals produced by respective railway signalling circuit means coupled to a section of track and located at a train highway crossing and track portion on either side thereof for activating a warning system or crossing gate when a train is approaching or traversing a crossing from either direction and thereafter deactivating the system in a fail safe manner. The logic circuit includes a plurality of interconnected AND, OR, AND NOT logic gates. Additionally, a pair of flip-flop circuits are also connected into the circuitry for providing a determination of whether the train is approaching or receding from the crossing. The logic combination of the input signals also checks the condition of the circuit itself and provides an output indicative thereof to the system whenever the circuit adopts an abnormal state of operation.

3,691,371
TRAILABLE RAILWAY SWITCH MACHINE

Lyle L. Hylen, Wilkinsburg, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Filed July 23, 1970, Ser. No. 57,571
Int. Cl. B61l 5/06
U.S. Cl. 246—393 **9 Claims**

This disclosure relates to a trailable railway switch machine for use in classification yards and the like for moving the switch points between their two extreme positions. The switch machine includes a motion translating mechanism having a box shaft, a pivot block, a clevis, a link and a hand throw toggle shaft. A hand throw lever is connected to the hand throw toggle shaft. An electric motor is connected through a gear train, an electric clutch, a pinion and rack to a roller engaging a slotted arm of the box shaft. The switch points are connected through an operating rod by a cam roller engaging the slotted arm. The switch points may be selectively shifted either when the hand throw lever is manipulated or when the electric motor is energized. No movement is imparted to the hand



throw lever or the motor and gear train when the switch points are trailed to the wheels of a railway vehicle.

3,691,372
PHOTOELECTRIC TAPE READER HAVING READ HEAD DISPOSED ABOVE A LINE JOINING THE TOPMOST POINTS OF TWO DRIVE SPROCKETS

Arlon G. Sangster, Sterling, Mass., assignor to Jamesburg Corp., Worcester, Mass.

Continuation of Ser. No. 864,944, Sept. 25, 1969, which is a continuation-in-part of Ser. No. 693,778, Dec. 27, 1967. This application Feb. 11, 1971, Ser. No. 114,663
Int. Cl. G01n 21/30; G06k 7/00
U.S. Cl. 250—219 D **1 Claim**

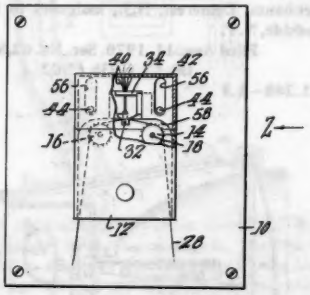
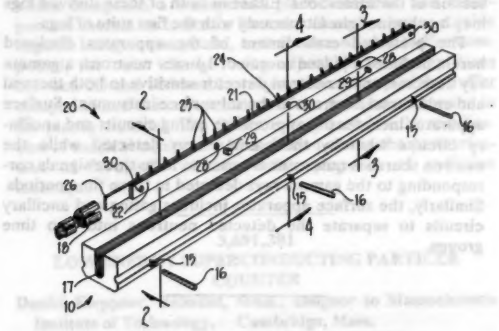


Photo-optical tape reader comprising a pair of toothed tape feeding sprocket areas arranged in alignment on parallel closely spaced axes, spaced from each other only sufficiently to provide room for a photosensitive device between them, a lamp source, improved guiding and tension control of the tape leaving the side edges of the tape free and unencumbered, all of the guiding being done by the sprocket teeth; and including mechanical hold-down means for the tape relative to the sprocket areas by means of a pivoted cover allowing the tape to be manually loaded and unloaded, the cover confining the tape and insuring that it is in position to be correctly driven, said cover also shielding ambient light and protecting the photosensitive device from dirt and dust.

3,691,373
CORONA DEVICE

Robert G. Compton, Albuquerque; Ray S. Richmond, Placitas, and Robert A. Tracy, Albuquerque, all of N. Mex., assignors to First City National Bank of Houston, as Trustee of the Francis A. Callery 1968 Trust

Filed April 20, 1970, Ser. No. 29,926
Int. Cl. G03g 15/00
U.S. Cl. 250—49.5 ZC 11 Claims

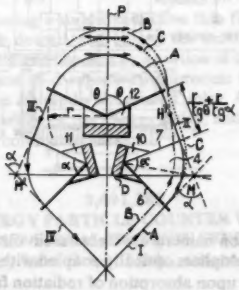


A corona device for charging insulating surfaces comprising an electrically nonconductive U-shaped base having a corona generating member mounted in the central slot. The corona generating member comprises two electrically conductive side strips and an electrically conductive central strip having a number of projections along the top edge, the member being held together and fastened to the base by a number of transverse pins fitted into matching holes in the three strips.

3,691,374
STIGMATIC AND ACHROMATIC SYSTEM FOR DEFLECTING A PARTICLE BEAM

Hubert Leboutet, Paris, France, assignor to Thomson CSF

Filed Aug. 25, 1970, Ser. No. 66,849
Claims priority, application France, Sept. 10, 1969, 6930797
Int. Cl. H01j 37/00; G01n 23/00
U.S. Cl. 250—49.5 D 8 Claims



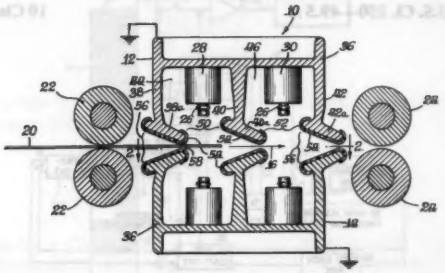
The present invention relates to magnetic deflection devices for beams of charged particles.

The system according to the invention comprises four deflecting elements arranged in pairs symmetrically with respect to a plane perpendicular to the plane containing the path of the beam. The distance between the faces of the deflecting elements is adjusted so that the energy conjugates of the two intermediate deflecting element coincide with the energy foci of the terminal deflecting elements. The device is thus achromatic.

3,691,375
CHARGING DEVICE

Stanley A. Gawron, Mount Prospect, and Kristian L. Helland, Schaumburg, both of Ill., assignors to Addressograph-Multigraph Corporation, Mount Prospect, Ill.

Continuation of Ser. No. 726,793, May 6, 1968, abandoned.
This application Sept. 8, 1970, Ser. No. 70,512
Int. Cl. G03g 15/00
U.S. Cl. 250—49.5 ZC 10 Claims

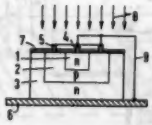


Corona discharge electrodes for applying a sensitizing charge to a moving sheet of photoelectrostatic paper are equipped with paper guide elements which support the sheet as it moves along a path of travel so that the sheet is kept clear of the fine wire electrodes. The fine wire electrodes are stretched inside an elongated housing, one side of which is open so as to freely emit the corona discharge. The opening is provided with laterally extending, spaced apart guides having a narrow flat support attached to the lead edges of the opening of the housing so that the sheets of paper may bridge the opening without entering and at the same time leaving an uninterrupted path for the corona discharge to reach the paper.

3,691,376
METHOD OF INCREASING THE CURRENT AMPLIFICATION AND THE RADIATION RESISTANCE OF SILICON TRANSISTORS WITH SILICON OXIDE COVER LAYER

Rudolf Bauerlein, and Dieter Uhl, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Munich, Germany

Filed Jan. 29, 1970, Ser. No. 6,724
Claims priority, application Germany, Jan. 31, 1969, P 19 04 763.3
Int. Cl. H01j 37/00; G01n 23/00
U.S. Cl. 250—49.5 TE 8 Claims



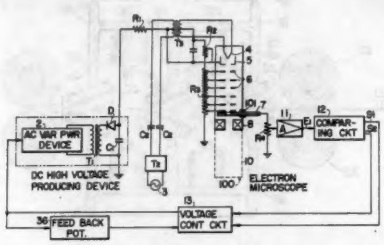
Method of increasing the current amplification and the radiation resistance of silicon transistors having a silicon oxide cover layer. The transistor is first exposed to an ionizing X-ray, gamma or electron radiation of such energy that the silicon oxide layer is penetrated by at least a portion of the radiation, and of a dose between 10^4 and 10^9 rad. The transistor is subsequently subjected to an electric charge, without radiation effect whereby a blocking-layer temperature of about 50° to 250° C. occurs, and the sequence of irradiation and electric charges without radiation is repeated at least once.

3,691,377

AUTOMATIC CONTROL SYSTEM FOR VARYING A D.C. HIGH VOLTAGE FOR ACCELERATING TUBE OF ELECTRON MICROSCOPE AND THE LIKE

Isao Matsui, 1030, Ichige; Yoshihisa Minamikawa, 663, Ichige, both of Katsuta-shi; Shinjiro Katagiri, 73, Daimachi, Hachioji-shi, and Teruo Nakahara, 663, Ichige, Katsuta-shi, all of Japan

Filed Jan. 6, 1971, Ser. No. 104,418
Claims priority, application Japan, Jan. 16, 1970, 45/4332
Int. Cl. H01j *37/26*; G01n *23/00*
U.S. Cl. 250—49.5 A **10 Claims**



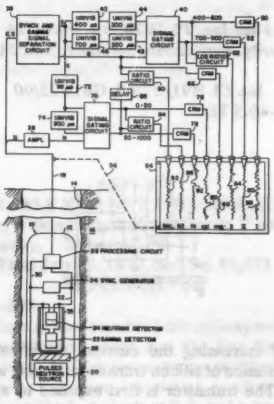
The discharge which occurs in an accelerating tube of an electron microscope is detected by a detector and a comparing circuit determines whether or not the value of the detected discharge is larger or smaller than a predetermined value at which a spark occurs to produce a high level signal or a low level signal, respectively. The d. c. high voltage applied to respective accelerating electrodes in the accelerating tube is decreased or increased in response to said high level signal or said low level signal so as to suppress any undesired large discharge in the tube, and thereby prevent sparking therein.

3,691,378

SIMULTANEOUS PULSED NEUTRON WELL LOGGING

Eric C. Hopkinson, and Arthur H. Youmans, both of Houston, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed June 26, 1970, Ser. No. 50,268
Int. Cl. G01v *5/00*
U.S. Cl. 250—71.5 R **27 Claims**



Methods and apparatus are disclosed for obtaining simultaneously a well log of the macroscopic thermal neutron cross-section (Neutron Lifetime Log) of formations adjacent a well bore and logs of the capture gamma rays, epithermal neutrons and thermal neutrons returning to a well bore as a result of irradiating the formations adjacent the well bore with pulses of neutrons. The thermal and epithermal neutron logs are obtained by separating the signal from a single detector into two time-dependent groups.

Methods and means are also disclosed for combining the capture gamma ray log with the thermal neutron log to obtain a log indicating the salinity of the fluids contained within said formations. Methods and means are also disclosed for combining the epithermal neutron log with the thermal neutron log to obtain a log related to the macroscopic thermal neutron cross-section of the formations. Either or both of these derived logs may be obtained simultaneously with the first suite of logs.

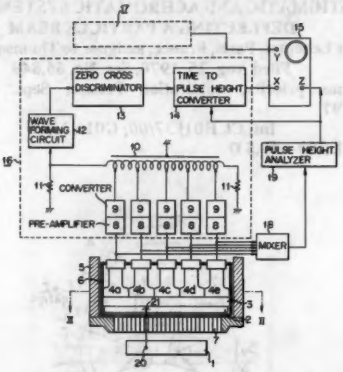
The preferred embodiment of the apparatus disclosed herein includes a pulsed source of 14-mev neutrons, a gamma ray detector, and a neutron detector sensitive to both thermal and epithermal neutrons in the subsurface instrument. Surface apparatus includes the appropriate gating circuits and ancillary circuits whereby the gamma rays detected while the neutron source is quiescent are used to form three signals corresponding to the gamma rays detected in three time periods. Similarly, the surface apparatus includes gating and ancillary circuits to separate the detected neutrons into two time groups.

3,691,379

SCINTILLATION CAMERA DEVICE

Elichi Tanaka, Tokyo; Toshiyuki Hiramoto, and Norimasa Nohara, both of Chiba, all of Japan, assignors to Director National Institute of Radiological Sciences, Science and Technology Agency, Chiba-shi, Japan

Filed Oct. 1, 1970, Ser. No. 77,305
Claims priority, application Japan, Oct. 1, 1969, 44/77803
Int. Cl. G01t *1/20*
U.S. Cl. 250—71.5 R **5 Claims**



A scintillation camera device wherein output pulse signals from photomultipliers optically coupled with a scintillator giving forth light upon absorption of radiation from a radioactive isotope taken into a foreground subject are supplied to a delay element such as a delay line for separating said output signals in time sequence so as to render them proportionate to the co-ordinate position of said photomultipliers; output signals from the delay element are shaped into bipolar symmetrical waves in a double delay line type wave forming circuit in such a manner that the zero-crossing time of a composite of wave forms is obtained in accordance with the co-ordinate position of the scintillation point; and the zero-crossing time of said composite wave form is converted to voltage, which is indicated on a cathode ray tube as the position of the scintillation point.

3,691,380
THRESHOLD VALUE DOSAGE METER

Klaus Hubner; Konrad Prokert, and Werner Stolz, all of Dresden, Germany, assignors to VEB Fluorwerke Dohna, Donna/Sa., Germany

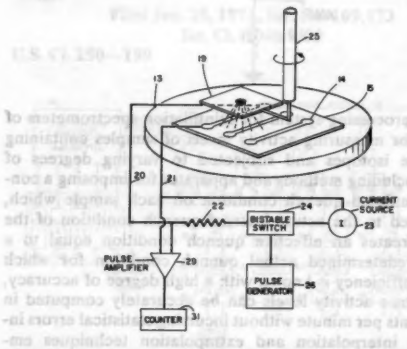
Filed Aug. 26, 1969, Ser. No. 853,205
Int. Cl. G01t 1/04
U.S. Cl. 250—83 CD 5 Claims

An indicator for dosage control in radiation processes in the Megarad range, consisting of a threshold-value dosage meter which comprises a transparent plastic material and incorporated therein an indicator for color change, a water-soluble organic halogen compound, and a water-soluble buffer compound, the color change being adjustable to energy doses between 0.5 and 10 Mrad by varying the contents of the buffer compound and the concentration of the halogen compound in the plastic material. The device is very useful in the sterilization of medical equipment by radiation and in the pasteurization of foodstuffs and for other purposes of radiation technique.

3,691,381
LOW ENERGY SUPERCONDUCTING PARTICLE COUNTER

Daniel Kleppner, Belmont, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed March 19, 1970, Ser. No. 20,977
Int. Cl. G01t 1/16
U.S. Cl. 250—83.3 R 7 Claims



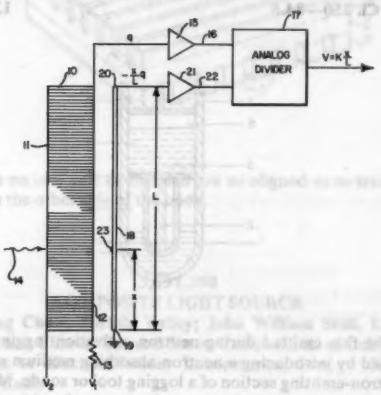
Apparatus having a superconductive thin film triggered by an energy pulse detects and counts the incidence of radiant energy upon the film. The film or a portion of the film is driven normal by means of a regenerative process initiated by the temperature rise caused by the energy pulse. A sensing circuit detects the presence of the energy pulse, and then resets the film to its superconductive state.

3,691,382
LOW ENERGY PARTICLE COUNTER WITH ONE-DIMENSIONAL POSITION SENSING

Toivo A. Somer, Lake Orion, Mich., assignor to The Bendix Corporation

Filed Oct. 30, 1970, Ser. No. 85,592
Int. Cl. G01t 1/16
U.S. Cl. 250—83.3 R 9 Claims

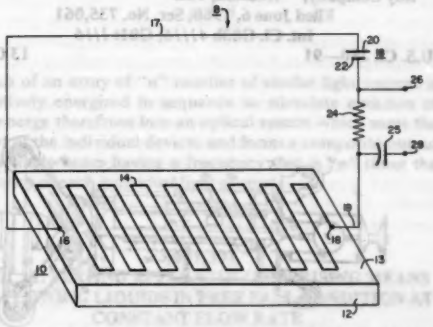
The invention provides one-dimensional position information relating to the detection of low energy particles such as photons or charged particles and also provides the capability of counting the detected particles. A particle detection device of known type is combined with a linear resistor which splits the charge emanating from the detection device in a ratio which is proportional to the position of the charge on the linear resistor. An analog divider divides the proportional charge on the linear resistor into the output charge from the detection device to thereby yield an output indication which is independent of the statistically variable total charge emanating from the detection device. The output of the divider is, therefore, an indication of the position at which the charge emanated from the detection device, and also shows that a detected particle impacted the input end of the detector. Accordingly, the number of detectable charges which impinged upon the input end of the detector within a chosen period of time can be counted, and the positions at which they struck the detector can be recorded.



3,691,383
DEVICE TO MEASURE INFRARED RADIATION

Peter D. Fisher, Okemos, Mich.; Dickron Mergerian, Baltimore, and Ronald W. Minarik, Lutherville, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 9, 1970, Ser. No. 45,100
Int. Cl. G01j 1/00, 5/00
U.S. Cl. 250—83.3 H 9 Claims



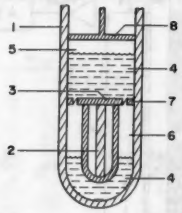
A device for detecting and measuring the output of a specific laser. The detector is a crystal which absorbs the light from the laser and converts the light into heat energy. A heat responsive, variable resistor-type element is located on the crystal to sense the heat. By measuring the change in current and voltage through the resistor-type element, the intensity of the laser light can be determined.

3,691,384

NEUTRON-ABSORPTION CONTROLLER FOR NEUTRON ACTIVATION LOGGING

John C. Robinson, and Myron K. Horn, both of Tulsa, Okla., assignors to Cities Service Oil Company, Tulsa, Okla.

Filed Sept. 2, 1969, Ser. No. 854,425
Int. Cl. G21g 3/02
U.S. Cl. 250—84.5 13 Claims



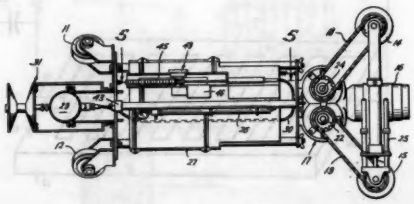
The flux emitted during neutron activation logging is controlled by introducing a neutron-absorbing medium about the neutron-emitting section of a logging tool or sonde. Means are provided to control the rate of neutron-absorbing medium transportation so that a predetermined rate of flux is emitted from the sonde. By controlling the rate of flux emitted from the sonde, an energy gradient is produced such that at a later period of time a gamma ray measuring device may be utilized to log the well which will detect substantially equal levels of radiation at every depth in the well. The tendency of a high degree of gamma radiation existing in the latter portions of the irradiated wellbore is eliminated, thus allowing the use of a singularly scaled detector over the entire wellbore. A more easily measured radiation level results in greater resolution of the reservoir composition, and detection of specific elemental concentration is enhanced.

3,691,385

CONTROL SYSTEM FOR WELDING INSPECTION MACHINE

Thomas E. Ketchbaw; Robert D. Foster, and Kiryako Arvanetakis, all of Houston, Tex., assignors to Houston Gamma Ray Company, Houston, Tex.

Filed June 6, 1968, Ser. No. 735,061
Int. Cl. G03b 41/16; G01t 1/16
U.S. Cl. 250—91 13 Claims



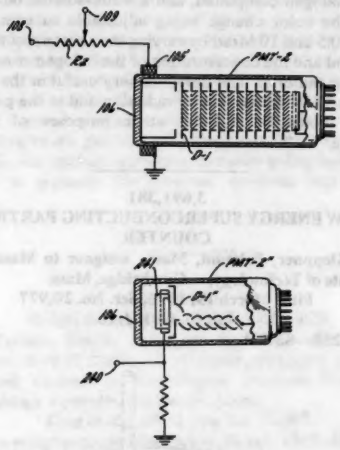
This patent discloses a crawler for moving through a pipeline and emitting rays at the location of circumferential welds in the pipeline to expose film positioned about the exterior of the pipe to check the weld. Movement of the crawler and control of the emission of the rays is provided by control circuitry responsive to a signal received from exterior of the pipeline.

3,691,386

DATA PROCESSING SYSTEM EMPLOYING QUENCH SIMULATION FOR ENABLING ACCURATE COMPUTATION OF SAMPLE ACTIVITY LEVELS IN LIQUID SCINTILLATION SPECTROMETRY

Robert E. Cavanaugh, Jr., La Grange Park, Ill., assignor to Packard Instrument Company, Inc., Downers Grove, Ill.

Filed April 14, 1967, Ser. No. 630,891
Int. Cl. G01t 1/20
U.S. Cl. 250—106 SC 29 Claims



A data processing system for scintillation spectrometers of the type for measuring activity levels of samples containing radioactive isotopes and subjected to varying degrees of quench, including methods and apparatus for imposing a controlled simulated quench condition on each sample which, when added to the actual internal quench condition of the sample, creates an effective quench condition equal to a known predetermined actual quench condition for which counting efficiency is known with a high degree of accuracy, whereby true activity levels can be accurately computed in decay events per minute without incurring statistical errors inherent in interpolation and extrapolation techniques employed with conventional quench correlation data. Various methods and apparatus are described for creating a controlled simulated quench for each sample, together with an automatic computational system which permits direct display of activity levels in units of decay events per minute.

3,691,387

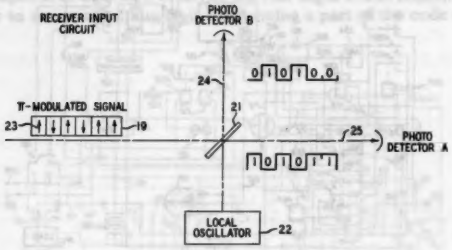
ERROR-CORRECTING OPTICAL PCM DETECTOR

Owen Edward DeLange, Rumson, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 691,764, Dec. 19, 1967, abandoned. This application May 6, 1971, Ser. No. 140,778
Int. Cl. H04b 9/100
U.S. Cl. 250—199 2 Claims

The application describes an arrangement for correcting detection errors in an optical PCM receiver. It is recognized that there is a finite probability that an incident low level pulse of light will not result in an output from an optical detector. Similarly, in the presence of background light, there is a finite probability that a spurious output pulse will be produced. In the detector to be described, the incident optical signal, which has been encoded in the so-called "even-parity" coding system, is converted into two complementary "on-off" PCM signals, each of which is coupled to a separate detector. The

baseband output signals are then compared and any detection errors corrected by deleting spurious pulses inserted by one or the other detectors, or by inserting pulses omitted by one or the other detectors.

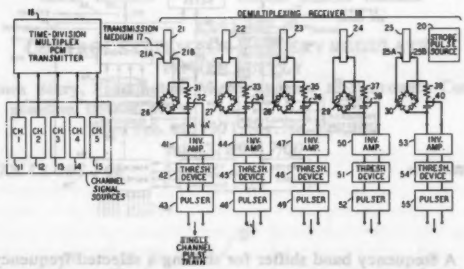


3,691,388

RECEIVER FOR A TIME-DIVISION-MULTIPLEXED TRAIN OF MODULATED PULSES EMPLOYING STROBED PHOTON-DRAG-EFFECT DEVICES

Chandra Kumar Naranbhai Patel, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 25, 1971, Ser. No. 109,173
Int. Cl. H04b 9/00
U.S. Cl. 250—199 5 Claims



There is disclosed a receiver for a time-division-multiplexed train of modulated pulses in which a tandem strobed arrangement of demultiplexing devices for respective channels employ thin wafers of semiconductor material in which a photon-drag effect is sensed. The photon-drag effect is sensitive to the coincidence of oppositely-directed modulated pulses and strobe pulses. A like arrangement for measuring very short optical pulses is disclosed, as is also an alternative method for making the measurement.

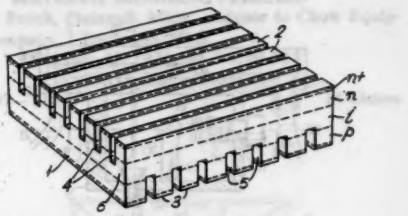
3,691,389

RADIATION DETECTOR COMPRISING SEMICONDUCTOR BODY INCORPORATING A TWO-DIMENSIONAL ARRAY OF P-I-N-DEVICES

Ronald Ellis, 125 Cavalier Road, Basing, near Basingstoke, and James Leonard Wankling, 162 Reading Rd., Wokingham, both of England

Filed June 9, 1969, Ser. No. 831,639
Int. Cl. H01j 39/12
U.S. Cl. 250—211 J 5 Claims

A radiation detector comprises a slab of semi-conductor material having a p-i-n structure with ribs formed on opposite sides of the slabs, in p-i and n-i junctions lying within the ribs.



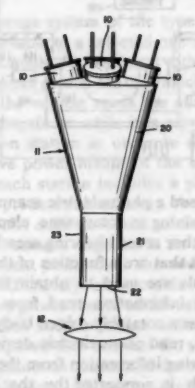
The ribs on one side of the slab are so aligned as to traverse those on the other side of the body.

3,691,390

COMPOSITE LIGHT SOURCE

Ken-Tang Chow, Portola Valley; John William Stull, Livermore, and Charles Edward Bates, Campbell, all of Calif., assignors to Electric-Nuclear Laboratories, Inc., Menlo Park, Calif.

Filed Oct. 10, 1969, Ser. No. 865,461
Int. Cl. G02f 1/28
U.S. Cl. 250—217 SS 10 Claims



Each of an array of "*n*" number of similar light sources is repetitively energized in sequence to stimulate emission of light energy therefrom into an optical system which sums the output of the individual devices and forms a composite output into a single beam having a frequency that is "*n*" times the frequency of each individual light source.

3,691,391

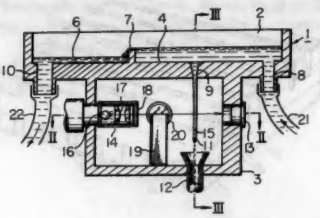
OPTICAL TESTING APPARATUS COMPRISING MEANS FOR FLOWING LIQUIDS IN FREE FALL CONDITION AT CONSTANT FLOW RATE

Hirotoshi Kishi, Tokyo, Japan, assignor to Iwatsu Electric Co., Ltd., Tokyo, Japan

Filed Oct. 5, 1970, Ser. No. 78,112
Claims priority, application Japan, Nov. 15, 1969, 44/91172
Int. Cl. G01n 1/10, 21/06, 21/26
U.S. Cl. 250—218 10 Claims

Improved photo-electric colorimeter possesses a flow system, wherein one part of a liquid to be measured falls at a constant flow rate defined substantially by a slit orifice for

falling thereof and a weir for overflowing the remainder of the liquid, said falling liquid being transformed by a guiding means



into a successive liquid film in a position between a light source and a photo-electric cell.

3,691,392

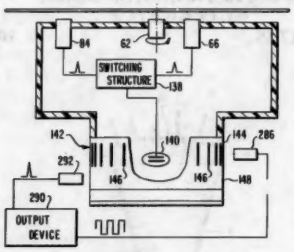
PHOTOELECTRIC SCANNING HEAD

Dominick Tringali, Columbia, S.C., assignor to Universal Business Machines Incorporated, Columbia, S.C.

Filed June 9, 1970, Ser. No. 44,741

Int. Cl. G08c 9/06

U.S. Cl. 250—219 DD **21 Claims**



There is disclosed a photoelectric scanner head for reading information pertaining to actual time, elapsed time or the like from a card or other record-bearing member, and for providing output signals that are a function of the information read; the output signals are used to obtain the usable electrical analogue of the information read from the member. The scanner comprises a rotatably driven body member mounting a source of light, read photoelectric devices and a switching circuit for retrieving information from the record member. A source of signals is supported by the body member and operably connected to the photoelectric devices by the switching circuit such that the source generates scanner output signals as a function of the information retrieved. Scanner output signals are detected, and in most disclosed embodiments, are useful to controllably gate timing pulses into counters such that the counters provide on their outputs a raw electrical analogue of the information read from the recorded member. Means may be connected to the counters for correcting the analogue to account for error in the recording made on the record member.

3,691,393

AUTOMATIC STARTER FOR INTERNAL COMBUSTION MACHINES

Christos Papachristou, Vassiliko, Halkis, Greece

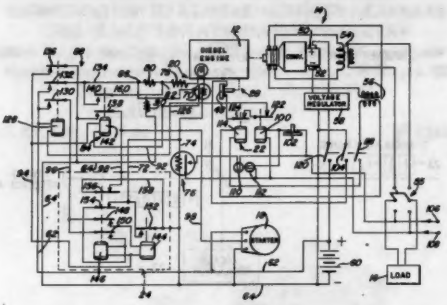
Filed March 30, 1971, Ser. No. 129,485

Claims priority, application Greece, Apr. 1, 1970, 39,620

Int. Cl. F02n 11/08

U.S. Cl. 290—30 **14 Claims**

An engine driven generator is associated with a current responsive relay to a signal from a preheating control circuit in response to loss of power from a main supply. The preheating control circuit sequentially effects energization of an engine glow plug and a starter to automatically start the engine. When a combustion gas sensor detects proper engine operation, the starter is disconnected and isolated. Restoration of power to the load from the generator latches the starter in its isolated condition.



3,691,394

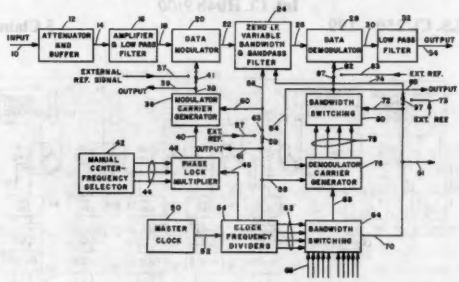
FREQUENCY BAND SHIFTER

Robert D. Davis, Spring Valley, Calif., assignor to Spectral Dynamics Corporation, San Diego, Calif.

Filed Aug. 25, 1971, Ser. No. 174,672

Int. Cl. H03d 7/00

U.S. Cl. 307—3 **16 Claims**



A frequency band shifter for shifting a selected frequency band in a complex waveform, which frequency band is translated with its relative frequency, phase and amplitude relationships maintained to a reproduced lower frequency and, if desired, to a smaller frequency band for analysis, which translation is processed by manual or digital control with a master local oscillator control clock that provides protection against drift in frequency and phase throughout the system.

3,691,395

Patent Not Issued For This Number

3,691,396

ELECTRONIC COMBINATION DOOR AND IGNITION LOCK

Gordon Hinrichs, Meguon, Wis., assignor to General Motors Corporation, Detroit, Mich.

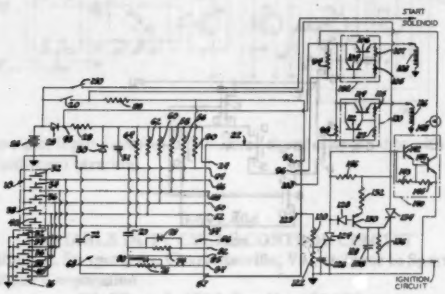
Filed Aug. 9, 1971, Ser. No. 170,191

Int. Cl. H02j 3/14

U.S. Cl. 307—40 **3 Claims**

A circuit is disclosed for unlocking the door and energizing the ignition circuit of a motor vehicle in response to manual insertion of a predetermined 5-digit code selected from a choice of four digits. The circuit includes a four stage solid state register, a six stage counter and logic gates which are intercon-

nected to energize a door unlocking solenoid in response to insertion of the code in the proper sequence from a pushbutton keyboard unit located on the door of the vehicle. A five stage counter and additional logic means is provided which responds to actuation of any of the four digits out of sequence or to actuation of any digit not forming a part of the code to



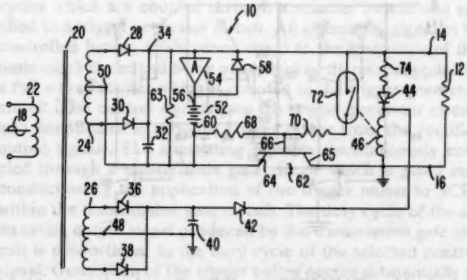
reset the two counters and the register. Upon entry into the vehicle and closure of the ignition switch, the last stage in the door unlocking logic is disabled and a parallel connected logic stage is enabled. The operator must then reinsert the code from a dash mounted pushbutton keyboard in the proper sequence to arm the ignition circuit.

3,691,397

CONTROL SYSTEM FOR BATTERY REGULATED POWER SUPPLY

Jack Beery, Farmington, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Feb. 10, 1971, Ser. No. 114,206
Int. Cl. H01j 7/00
U.S. Cl. 307—66 **4 Claims**



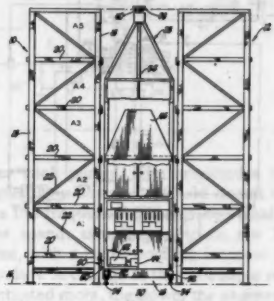
A control system utilizing a magnetic reed switch responsive to the output of a battery regulated power supply for controlling an impedance means to maintain the voltage output of the supply within a predetermined range. In the preferred embodiment, the power supply transformer has a separate secondary winding for controlling the energization of a relay coil to initially activate the reed switch. When the a.c. power is removed, particularly under adverse conditions, the battery maintains the output supply voltage within a predetermined voltage range until the relay coil senses a predetermined minimum voltage and in response thereto opens the reed switch effectively changing the impedance value of the impedance means from a finite value to an infinite value.

3,691,398

STATION ADDRESS AND CONTROL SYSTEM FOR MATERIAL HANDLING VEHICLES

Arthur R. Burch, Plainwell, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed June 15, 1970, Ser. No. 45,981
Int. Cl. H01h 35/00
U.S. Cl. 307—116 **14 Claims**



An automatic storage system of the type using a material handling vehicle movable to a selected one of a large number of storage bins on command is disclosed with an improved station address and control system for the vehicle. The automatic control means for the vehicle reads the address of a station while it is parked therein or while it is moving therethrough toward a designation station in order to develop a control signal for the motive power means of the vehicle. Improved address means at each station includes a plurality of binary code elements in a predetermined array. A transducer on the vehicle coacts with the address means at each station and includes a plurality of sensors disposed in an array corresponding to the code element positions in the address means. Each of the sensors is effectively connectable with the control means for the motive power means of the vehicle and a strobe signal element on each address means and a strobe sensor on the transducer are operative to connect the sensors to the control means for simultaneous readout of the address. In the address means the code signal elements take the form of plates or vanes of magnetic material. The sensors on the transducer are comprised of a magnetic reed switch with a permanent magnet mounted in spaced relation with an air gap therebetween and adapted to accommodate the magnetic vanes corresponding thereto.

3,691,399

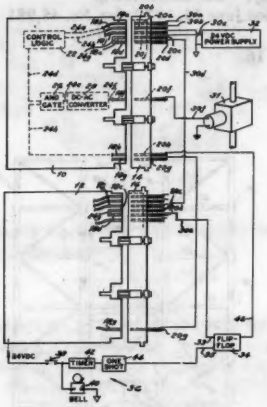
SAFETY CIRCUIT FOR ELECTRONIC MACHINE CONTROLS OF THE PLUG-IN MODULAR TYPE

Angelo N. Vinch, Warren, and David A. Kamulski, Detroit, both of Mich., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 11, 1971, Ser. No. 114,511
Int. Cl. H02j
U.S. Cl. 307—149 **13 Claims**

A safety circuit for preventing an electronic control from supplying signals to operate a machine whenever a circuit card is removed from the control. Removal of a circuit card causes a flip-flop to be set and to remain in that state until the

removed card is re-inserted, and a manually operated push button is actuated to reset the flip-flop. Operation of the push



button sounds a warning bell and resets the flip-flop after a predetermined time.

3,691,400

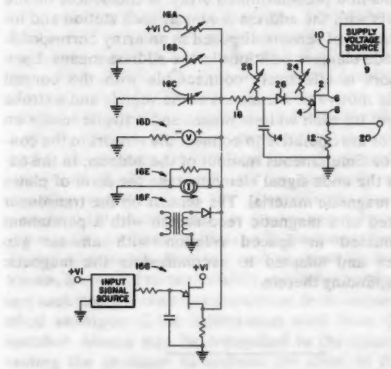
UNIJUNCTION TRANSISTOR ARTIFICIAL NEURON

William J. Askew, Arlington, Tex., assignor to LTV Aerospace Corporation, Dallas, Tex.

Filed Dec. 13, 1967, Ser. No. 690,357

Int. Cl. H03k *19/08*

U.S. Cl. 307—201 **1 Claim**



A circuit capable of large ranges of pulse rates and pulse widths and comprising a unijunction transistor having one base connected to a d-c source and the other base connected to ground through a resistor. An RC circuit consists of a second resistor and a capacitor connected between the d-c source and ground to determine pulse rate. A diode connects the junction between the second resistor and the capacitor to the emitter electrode to provide a discharge path for the capacitor through the transistor and the first resistor to ground to determine pulse width. A third resistor connects the d-c source to the emitter to bias the transistor to near its firing threshold. Input signal means supply an input signal to said junction to vary pulse rate.

3,691,401

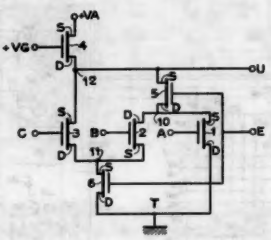
CONVERTIBLE NAND/NOR GATE

Franco Forlani, Rho, and Gianpiero Rodari, Milan, both of Italy, assignors to Honeywell Information Systems Italia, Milan, Italy

Filed March 10, 1971, Ser. No. 122,714

Int. Cl. H03k *19/34, 19/36*

U.S. Cl. 307—215 **8 Claims**



A novel integrated circuit element for use as a dual functioning NAND/NOR gate for a digital data processing circuit is herein disclosed. The integrated circuit element contains a first set of field effect transistors that can be operatively connected in either series or parallel to thus perform a NAND or NOR function on any inputed signals. The operative interconnections are implemented by a second set of field effect transistors which provide either the series or parallel interconnections by appropriately responding to a command signal.

3,691,402

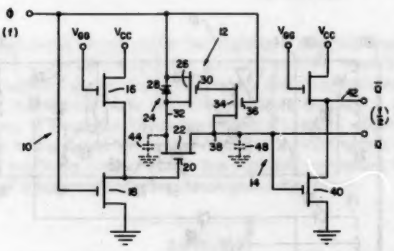
FREQUENCY DIVIDER CIRCUIT

Alton O. Christensen, Houston, Tex., assignor to Shell Oil Company, New York, N.Y.

Filed April 29, 1971, Ser. No. 138,416

Int. Cl. H03k *21/00, 23/08*

U.S. Cl. 307—225 C **6 Claims**



A clockless FARMOST toggle flip-flop circuit is combined with a pair of ratioed inverters, a clock supply, and a DC power supply to form a simple, low-power frequency divider.

3,691,403

OPTICALLY COUPLED LOGIC CIRCUIT

Reed A. Newmeyer, Glendale, Ariz., assignor to Solid State Devices, Inc., Tempe, Ariz.

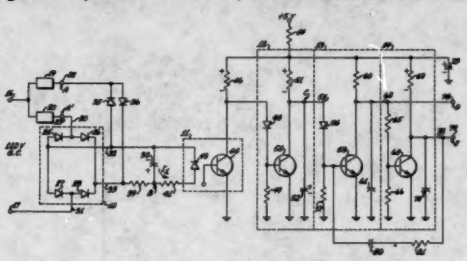
Filed Sept. 27, 1971, Ser. No. 183,965

Int. Cl. H03k *3/42*

U.S. Cl. 307—231 **6 Claims**

A full-wave bridge rectifier, an optical coupler, and a delay circuit provide electrical noise isolation between a pair of

signal-input terminals and a pair of output terminals. Output signals are provided at the output terminals whenever a full-



wave a.c. input signal or a half-wave signal is applied to either signal-input terminal.

3,691,404

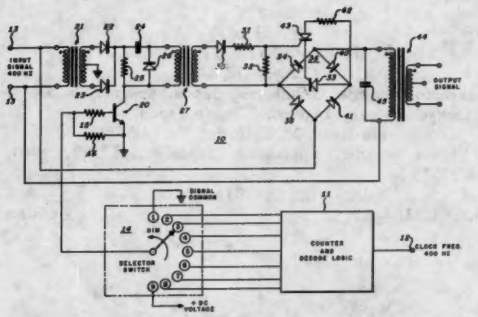
VARIABLE DUTY CYCLE CONTROL CIRCUIT

Wilbert E. Swygert, Jr., Charlottesville, Va., assignor to Sperry Rand Corporation

Filed Sept. 1, 1971, Ser. No. 176,923

Int. Cl. H02m *1/08, 5/16;* **H03k** *17/28*

U.S. Cl. 307—252 W **12 Claims**



A control circuit includes counter and decode logic which divides down a basic clock frequency signal to provide control signals at specified pulse repetition rates and selectable duty cycles which are coupled through a selector switch and applied to a trigger generator circuit. An alternating signal to be controlled having a frequency equal to the frequency of the basic clock signal and being phase-locked thereto is applied to a full wave rectifier which is coupled to the trigger generator circuit. The control signals gate the trigger generator circuit into conduction to produce trigger pulses from the rectifier output signals. The alternating signal is simultaneously coupled through a transmission gate circuit which is gated into conduction by the application of the trigger pulses to SCRs within the transmission gate circuit. The duty cycle of the alternating output signal produced by the transmission gate circuit is proportional to the duty cycle of the selected control signal. Generation of the trigger pulses occurs substantially at the zero-crossovers of the alternating signal thereby eliminating the electro-magnetic interference coupled into the alternating output signal from the transmission gate circuit.

3,691,405

THERMOCOUPLE RESPONSE TIME COMPENSATION CIRCUIT ARRANGEMENT

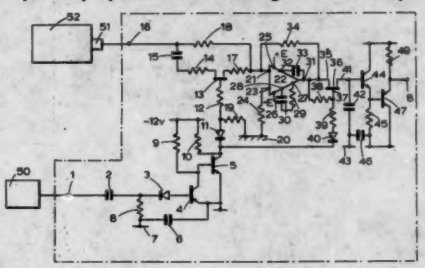
Roy Kendell, Harrow, England, assignor to Ultra Electronics Limited, London, England

Filed Aug. 10, 1971, Ser. No. 170,459

Int. Cl. F02g *3/00*

U.S. Cl. 307—295 **7 Claims**

A circuit for use in a gas turbine engine system with a gas temperature-sensing thermocouple to compensate for time lag in the response of the thermocouple to gas temperature change and, particularly, to compensate for increase in the time lag with decrease in engine speed. In addition to a continuous proportional signal, a periodical pulse signal is produced at a frequency proportional to the engine speed and an amplitude proportional to the change of thermocouple out-



put voltage over each period. The amplitudes of the two signals are sampled by a sample-and-hold circuit to produce an output. Since the frequency of the pulse signal is proportional to engine speed, sampling intervals are longer the slower the engine, with a corresponding increase in the amplitudes of the pulses. A change in thermocouple output voltage is thus accentuated more, the slower the engine speed.

3,691,406

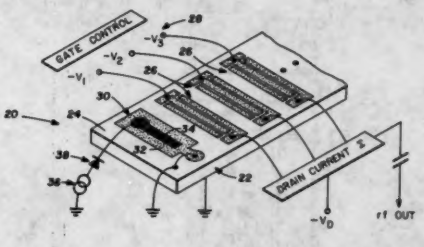
SURFACE ACOUSTIC WAVE GENERATING SYSTEM

Jack P. Mize, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 13, 1971, Ser. No. 171,678

Int. Cl. H03k *3/26*

U.S. Cl. 307—308 **25 Claims**



In a surface acoustic wave generating system, a portion of a body of semiconductor material is incorporated in structure having electrical capacitance. The capacitive structure is energized to produce mechanical stress in the body of semiconductor material and thereby generate surface acoustic waves on a surface of the body of semiconductor material. In one embodiment of the invention the capacitive structure comprises one or more *p–n* junctions formed in the body of semiconductor material and intersecting the surface. In another embodiment the capacitive structure comprises one or more MOS capacitors disposed on the body of semiconductor material.

3,691,407

TOY ELECTRIC POWER TOOL

Erich Klett, Stuttgart-Bad Cannstatt; Kurt Paule, Stuttgart, and Alfred Hettich, Echterdingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Nov. 17, 1970, Ser. No. 90,409

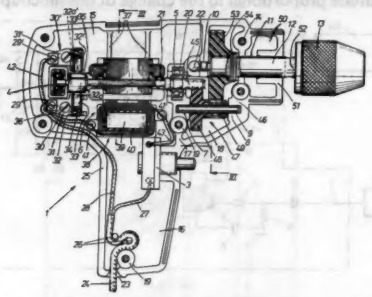
Claims priority, application Germany, Nov. 18, 1969, P 19 57 896.2

Int. Cl. H02k *7/14*

U.S. Cl. 310—1 **4 Claims**

A toy device which is a full-size replica of an electric power tool, particularly of a portable electric drill. Its housing is at

least partially transparent to permit observation of the assembled parts and/or the operation of its motor which is connectable only to a source of low-voltage current. The tool spindle of the toy device can carry a chuck, a gear, a grinding wheel, a pulley or it can be connected to another torque transmitting or



receiving component, for example, to the driven part of another toy device such as a toy saw, a toy grinder, a toy fan or the like. The housing of the toy device carries markings to facilitate the laying of conductors. When taken apart, the components of the toy device are stored in the compartments of a box.

3,691,408

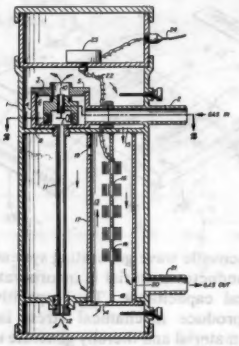
METHOD AND MEANS FOR THERMOELECTRIC GENERATION OF ELECTRICAL ENERGY

John B. Rosso, Tulsa, Okla., assignor to Combustion Engineering, Inc., New York, N.Y.

Filed Jan. 27, 1970, Ser. No. 6,160

Int. Cl. H02n 3/00

U.S. Cl. 310—4 9 Claims



A system is disclosed in which gas produced from a hydrocarbon reservoir is directed through a vortex tube to separate hot and cold fractions therefrom. The fractions are passed across heat exchange elements in contact with a thermopile to produce an electric current.

3,691,409

VIBRATION GENERATING DEVICE FOR VIBRATORY MACHINE

Hisamine Kobayashi, Nagoya, Japan, assignor to Kabushiki Kaisha Shikishima Tipton, Nagoya, Japan

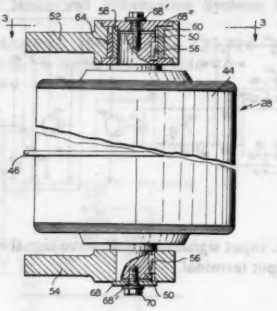
Division of Ser. No. 787,534, Dec. 27, 1968, abandoned. This application Nov. 2, 1970, Ser. No. 86,170

Claims priority, application Japan, Dec. 28, 1967, 42/84917; Apr. 20, 1968, 43/32278; May 10, 1968, 43/38696

Int. Cl. H02k 7/06

U.S. Cl. 310—81 3 Claims

A vibration generating device for a vibratory machine has a reversible electric motor with at least two eccentric weights on the opposite ends of the shaft thereof, the position of which is automatically changeable upon reversal of the direction of



rotation of the motor. The weights act during rotation of the motor to cause the machine to effect different vibratory motion depending on the direction of rotation of the motor.

3,691,410

METHOD OF OPERATING PIEZOELECTRIC TRANSFORMERS

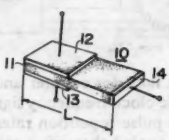
Takehiko Kawada, Yokohama, Japan, assignor to Denki Onkyo Company, Limited, Tokyo, Japan

Filed Sept. 23, 1970, Ser. No. 74,549

Claims priority, application Japan, Sept. 29, 1969, 44/77675

Int. Cl. H01v 7/00

U.S. Cl. 310—8.1 7 Claims



In a high voltage generating device comprising a piezoelectric transformer having a pair of driving electrodes and an output electrode, and a driving source for applying a driving voltage across the driving electrodes, the frequency of the driving source is shifted a predetermined value about a frequency equal to $n/2$ times (where n is an integer) of the natural frequency of the mechanical vibration of the piezoelectric transformer.

3,691,411

PIEZOELECTRIC QUARTZ ELEMENT

Albert Pavlovich Fedorkov, ulitsa Lobachevskogo, 18, kv. 14; Mikhail Iosifovich Yaroslavsky, Baikalskaya ulitsa, 30, korpus 2, kv. 44, and Galina Yankelevna Orlovskaya, Istrinskaya ulitsa, korpus 1, kv. 55, all of Moscow, U.S.S.R.

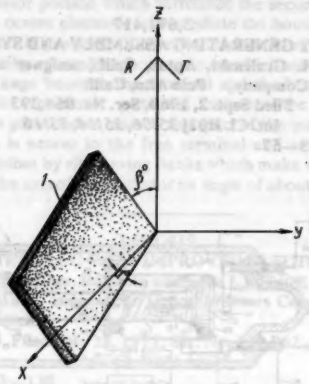
Filed Jan. 19, 1971, Ser. No. 107,708

Int. Cl. H01v 7/00

U.S. Cl. 310—9.5 1 Claim

A piezo-electric quartz element, which is a parallelepiped cut from a slab of quartz crystal, having the XYZ coordinate axes. The edges of the parallelepiped perpendicular to the Y-axis of the crystal are turned through an angle of 25° to 30° relative to the X and Z axes of the crystal. Each of the major

faces of this parallelepiped makes an angle of 64° to 73° with the Z-axis of the crystal. With the faces of the element thus



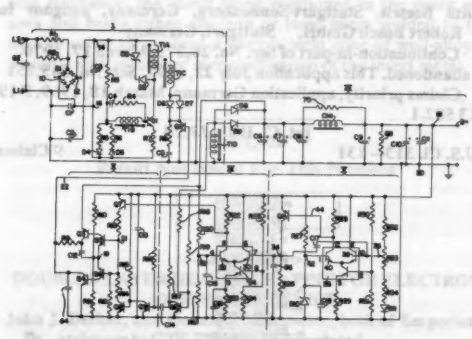
oriented, the second and third order temperature coefficients of frequency are practically zero.

3,691,412

SUBSTANTIALLY RIPPLE-FREE FAST-RESPONSE VOLTAGE REGULATED DIRECT-CURRENT POWER SUPPLY

Theodore A. Hedman, Davenport, Iowa, assignor to Gulf & Western Industries, Inc., New York, N.Y.

Filed May 13, 1971, Ser. No. 142,973
Int. Cl. H02m 7/20; H01m 3/32
U.S. Cl. 321—18 11 Claims



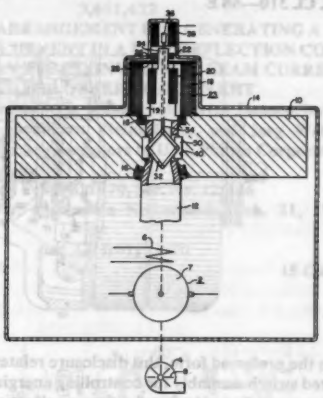
An alternating-current to direct-current power converter is provided in which alternating-current input is rectified to direct-current and the direct-current voltage is chopped into high frequency alternating current by a free-running, current-limited blocking oscillator. A delay network is provided for squelching high voltage spikes which would otherwise be induced by rate of change of current in transformer inductance. A clamp circuit is provided for holding transformer-generated energy, which is periodically released according to the demands of the power supply. High clamp clamping current-resistance losses are thus avoided.

3,691,413

METHOD AND MEANS FOR STARTING HIGH INERTIA MOTORS

James G. Russell, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed April 16, 1970, Ser. No. 29,169
Int. Cl. H02k 7/10
U.S. Cl. 310—41 4 Claims



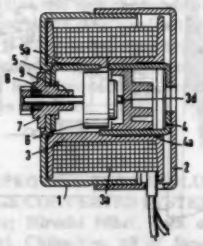
The motor associated with a high inertia flywheel is started with the flywheel disconnected therefrom. A separate device is utilized to bring the flywheel to the speed of the motor, which device comprises a stator coil mounted integral with the flywheel and concentric with a rotor coil which is mounted integral with a shaft extending from the motor. Coupling bars are also provided internal of the flywheel for positively locking the flywheel to the motor shaft extension when same is brought to synchronous speed therewith.

3,691,414

STEPPING MOTOR FOR SMALL DRIVING POWER

Friedrich Kappius; Reiner Kristen; Hanns Ott, and Heinz Reinholtz, all of Nuernberg, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed May 21, 1971, Ser. No. 145,626
Claims priority, application Germany, June 3, 1970, P 20 27 138.9
Int. Cl. H02k 37/00
U.S. Cl. 310—49 6 Claims

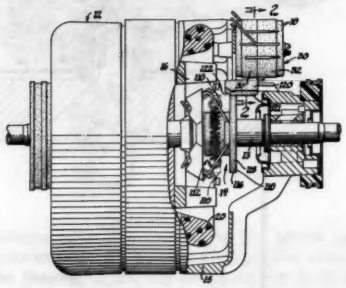


The stator winding carrier of a stepping motor has guide slots formed in an axially extending bore formed therein. The guide slots extend substantially parallel to the axis of the carrier. A thrust bearing plate is formed in the carrier across the bore. The pole tips of each of first and second claw pole stator parts of different widths are fittedly inserted in corresponding guide slots of the carrier with the axial position of the rotor being determined by the plate.

3,691,415
DRYER MOTOR SWITCH AND ACTUATOR

James L. Hancock, Fairborn, and Joseph A. Bliss, Dayton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 16, 1971, Ser. No. 181,066
Int. Cl. H02k *11/00*
U.S. Cl. 310—68 E 3 Claims

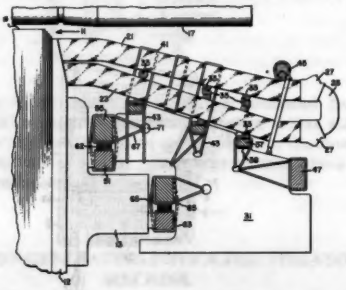


In the preferred form, this disclosure relates to a plunger actuated switch assembly for controlling energization of the start and run winding circuits of a dynamoelectric machine having a rotatable output shaft and a centrifugal governor for shifting a collar between a standstill position and a second position when the speed of the output shaft attains a predetermined value. The switch assembly includes a plunger or actuator having an elongated boot portion which rides on the annular periphery of the collar during standstill, the collar holding the switch means in a first position in which it effects energization of both the start and run windings. The switch plunger is spring biased toward a second position in which it effects energization of only the run windings and moves to its second position when the collar is shifted toward its second position.

3,691,416
FLEXIBLE SUPPORT STRUCTURE FOR END WINDING CONNECTIONS

Karl F. Drexler, Burnt Hills, and Edward E. Gibbs, Schenectady, both of N.Y., assignors to General Electric Company

Filed June 14, 1971, Ser. No. 152,698
Int. Cl. H02k *3/46*
U.S. Cl. 310—260 11 Claims

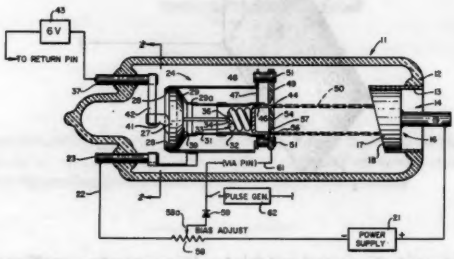


In a dynamoelectric machine, an insulating end winding support providing unidirectional flexibility in response to axial thermal excursions of the end winding members. An insulating support ring is concentrically mounted on the dynamoelectric machine while a floating outer support is fixed to the end winding members. A spacer is positioned between the first support ring and the floating support and a kinked tie wrap is secured around the first support ring, the floating outer support and the spacer. A second embodiment requires the use of two concentrically mounted support rings with a spacer there between secured with a kinked tie wrap. A third embodiment discloses a flanged support ring and a "phase jumper" with a spacer there between secured by a kinked tie wrap.

3,691,417
X-RAY GENERATING ASSEMBLY AND SYSTEM

Nicholas M. Gralenski, Aptos, Calif., assignor to Watkins-Johnson Company, Palo Alto, Calif.

Filed Sept. 2, 1969, Ser. No. 854,393
Int. Cl. H01j *35/06, 35/14, 35/16*
U.S. Cl. 313—57 1 Claim

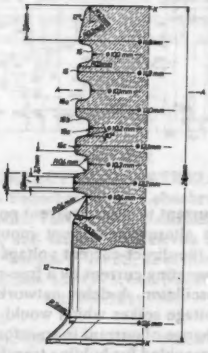


An X-ray generating tube of a type employing a target of material disposed to be struck by high energy electrons to develop X-rays employs a hollow beam of electrons impinging upon the target. An oxide type, highly emissive cathode assembly provides much higher emission at lower temperatures and with prolonged life against the normally deleterious effects of ion bombardment using an ion collector surface within the hollow beam to intercept ions attracted into the beam in favor of the actively emitting portion of the cathode. A control grid serves to form the hollow beam, provide the shield, and when connected to a pulse generator, serves to modulate or pulse the beam.

3,691,418
HIGH VOLTAGE SPARKPLUG

Otto Beesch, Stuttgart-Sonnenberg, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Continuation-in-part of Ser. No. 20,275, March 17, 1970, abandoned. This application July 22, 1971, Ser. No. 165,151
Claims priority, application Germany, March 18, 1969, P 19 13 582.1
Int. Cl. H01t *13/20*
U.S. Cl. 313—131 9 Claims



A high-voltage sparkplug has an electrically conductive housing from one end of which a ground electrode projects. An elongated center electrode extends through the housing

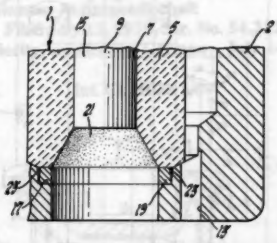
and has a first end portion projecting from the one end and defining a spark gap with the ground electrode and a second end portion projecting from the opposite end of the housing and having a free terminal. An electrical insulator insulates the center electrode from the housing and includes an elongated insulator portion which surrounds the second end portion of the center electrode intermediate the housing and the terminal and is provided in its outer circumferential surface with a plurality of axially spaced grooves which serve to retard current leakage between the terminal and the housing by increasing the sparkover potential between the two. The grooves are provided at least in that part of the insulator portion which is nearer to the free terminal and are separated from each other by ribs having flanks which make with a plane normal to the axis of the insulator an angle of about 10°.

3,691,419

IGNITER PLUG WITH IMPROVED ELECTRODE

Donald R. Van Uum, Davison, and John I. Jalbing, Millington, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 25, 1971, Ser. No. 118,862
Int. Cl. H01t *13/20*
U.S. Cl. 313—138 **3 Claims**



This invention relates to an igniter plug adapted for continuous sparking operation for extended periods of time at temperatures as high as about 2,000° F. wherein the shell body constituting the ground electrode is provided with a ductile iridium metal insert ring having high oxidation and spark erosion resistance, the insert being positioned in the spark gap area and being either electron or laser beam welded to the shell in order to produce a narrow weld zone of well-alloyed material with minimum recrystallization of the insert metal.

3,691,420

Patent Not Issued For This Number

3,691,421

DOUBLED LAYER HEATER COATING FOR ELECTRON DISCHARGE DEVICE

John J. Decker, and Donald R. Kerstetter, both of Emporium, Pa., assignors to GTE Sylvania Incorporated

Filed July 15, 1971, Ser. No. 162,992
Int. Cl. H01j *1/14, 19/06*
U.S. Cl. 313—345 **5 Claims**

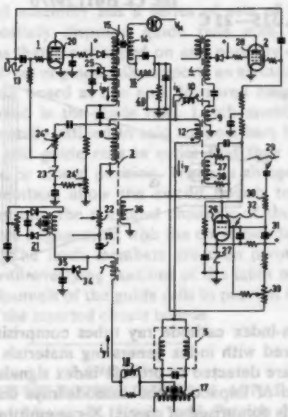
A double layer heater coating on a wire support comprises a first layer of aluminum oxide and an overcoating layer comprising particles of aluminum oxide, zirconium oxide or beryllium oxide overcoated with metallic tungsten which in turn is overcoated with a layer of a different material whereby oxidation of the tungsten is substantially prevented. The different material can be aluminum oxide, zirconium oxide, platinum, or iridium.

3,691,422

CIRCUIT ARRANGEMENT FOR GENERATING A SAWTOOTH CURRENT IN A LINE DEFLECTION COIL FOR A DISPLAY TUBE CONVEYING A BEAM CURRENT AND FOR GENERATING AN EHT

Antonius Boekhorst; Peter Johannes Hubertus Janssen, both of Emmasingel, Eindhoven, Netherlands, and Jorg Wolber, Hamburg, Germany, assignors to U. S. Philips Corporation, New York, N.Y.

Filed Feb. 18, 1970, Ser. No. 12,346
Claims priority, application Netherlands, Feb. 21, 1969, 6902807
Int. Cl. H01j *29/70*
U.S. Cl. 315—19 **15 Claims**



A circuit for generating both line deflection current and final anode voltage that has main and auxiliary generators. The main generator supplies part of the deflection current and the anode voltage, while the auxiliary generator supplies the remaining part of the deflection current. The main generator is stabilized against anode voltage variations as a result of the beam current variations and component ageing, its operating line being located just above or at the limit of saturation. The auxiliary generator is stabilized against supply voltage variations and its stabilizing circuit can also be modulated by a parabola voltage of field frequency in order to correct the East-West pincushion distortion.

3,691,423

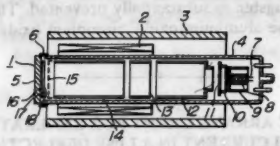
METHOD OF IMPROVING THE RESOLUTION OF AN IMAGE CONVERTER SYSTEM

Mituhiro Yoshikawa; Hiroshi Nihei, both of Mobara, and Hiroichi Shibasaki, Chiba-ken, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 627,076, March 30, 1967, abandoned.
This application Dec. 30, 1969, Ser. No. 889,354
Claims priority, application Japan, April 6, 1966, 41/21197
Int. Cl. H01j *29/70*
U.S. Cl. 315—31 TV **5 Claims**

A method of improving the resolution of an image converter system having a pickup tube is related to the selective adjustment of currents applied to an electromagnetic focusing

means and an electrostatic focusing means so that the electromagnetic focusing means provides no more than 80 percent



and not less than 20 percent of the total focusing field provided by the electromagnetic means and the electrostatic means in combination.

3,691,424

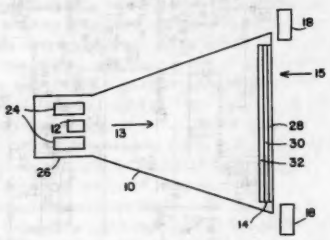
TARGET SCREENS FOR CATHODE RAY TUBES UTILIZING INDEX GENERATING MATERIALS THAT EMIT X-RAYS

David M. Goodman, 3843 Debra Court, Seaford, N.Y.

Division of Ser. No. 800,854, March 20, 1959, Pat. No. 3,081,414. This application Jan. 27, 1961, Ser. No. 85,353

Int. Cl. H01j *29/70*

U.S. Cl. 315—21 C **7 Claims**



Beam-index cathode ray tubes comprising target screens structured with index generating materials that emit X-rays which are detected to provide index signals indicative of the position of impact of the cathode rays on the screen. The screen is comprised of special X-ray emitting regions, including thin narrow strips in register with different color-producing phosphors. Embodiments are disclosed with and without an electron-transparent aluminum layer overlaying the phosphors and the index strips.

3,691,425

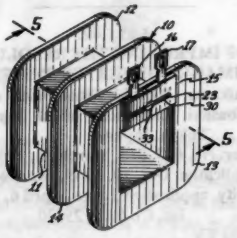
TRANSFORMER WITH A FUSE

Arthur G. Weyrich, Rolling Meadows; Richard R. Bertrand, Skokie, and Edwin D. Karinski, Chicago, all of Ill., assignors to Certron Corporation, Anaheim, Calif.

Filed April 15, 1971, Ser. No. 134,340

Int. Cl. H02h *7/04*

U.S. Cl. 317—15 **9 Claims**



A plastic bobbin-like body for a fused coil, such as a primary winding of a power transformer, is provided with end flanges. A fuse-mounting groove is provided on the outside of a thickened section of one flange. A fuse strip made of a metal having a suitably low melting point is placed in the groove and is held in position by barbed connecting lugs inserted into passages which run parallel to the flange walls to the bottom of the groove. The coil is connected in series with the fuse through the lugs. A large cavity around the center of the groove allows liquid metal to quickly fall away from the fuse when excessive current heats the fuse to its melting temperature. Alternatively, the lugs may be provided with tabs which project out of the thickened section. The tabs are then rolled over the fuse mounted on the outside of the thickened section.

3,691,426

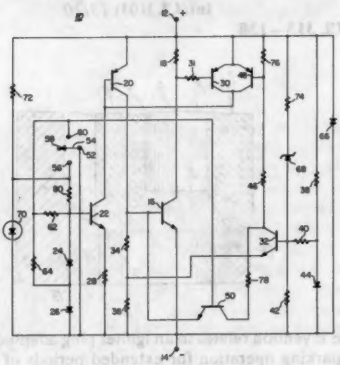
CURRENT LIMITER RESPONSIVE TO CURRENT FLOW AND TEMPERATURE RISE

Roy J. Mankovitz, Tarzana, Calif., assignor to Teledyne, Inc., Los Angeles, Calif.

Filed Oct. 26, 1971, Ser. No. 192,232

Int. Cl. H02h *3/08, 5/04*

U.S. Cl. 317—23 **10 Claims**



A current limiting circuit for controlling the flow of current in which a primary current conducting path includes the emitter-collector circuit of a power transistor. A driver transistor provides base current to the power transistor, thereby controlling the magnitude of current flow through the power transistor. A constant current is applied to the base electrode of the driver transistor. Shunt means are provided which are responsive to the magnitude of current flowing in the power transistor for shunting a portion of the constant current away from the base electrode of the driver transistor whenever the magnitude of the current in the power transistor exceeds a predetermined value, thereby diminishing the output current from the driver transistor and thus the base current in the power transistor.

3,691,427

PROTECTIVE CIRCUIT FOR AN ALL STAGE DIRECT-COUPLED TRANSISTOR OUTPUT TRANSFORMERLESS-OUTPUT CONDENSERLESS AMPLIFIER

Masatsugu Honda, Odawara, and Masanobu Shinozaki, Sagamihara, both of Japan, assignors to Victor Company of Japan, Ltd., Kanagawa-ku, Yokohama, Kanagawa-ken, Japan

Filed March 29, 1971, Ser. No. 128,865

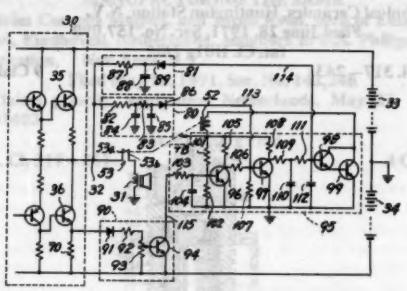
Claims priority, application Japan, March 29, 1970, 45/29640; June 14, 1970, 45/51252

Int. Cl. H02h *3/20*

U.S. Cl. 317—31 **6 Claims**

A protective circuit comprises a detecting circuit for detecting an unbalanced DC voltage developed in an output of an all stage direct-coupled transistor output transformerless-output condenserless amplifier and means for disconnecting a load

from the amplifier and thereby protecting the load when a detected output is developed in the detecting circuit. The means



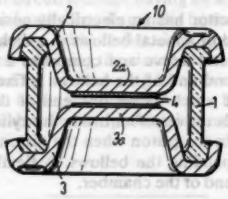
for protection is so constructed that it will operate irrespective of polarity of the unbalanced DC voltage.

3,691,428

VOLTAGE OVERLOAD ARRESTER

Alex Bahr, and Gerhard Peche, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft

Filed July 13, 1970, Ser. No. 54,312
Claims priority, application Germany, July 14, 1969, P 19 35 734.7
Int. Cl. H02h *1/04*
U.S. Cl. 317—61 10 Claims



A voltage overload arrester comprising a pair of shaped electrodes having surface portions in spaced adjacent relation to each other and gas tightly sealed in an insulating housing. The adjacent surface portions of each electrode are provided with a thin coating of a sintered mixture of a material having a high thermal electron-emission ability and including Ni, a mixture of Ni and ThO_2 and a mixture of Ni, MgO and ThO_2.

3,691,429

MOUNTING STRUCTURE FOR MINIATURE CIRCUIT ELEMENTS

Peter S. Glaser, Culver City, Calif., assignor to Electronic Arrays, Inc., Mountain View, Calif.

Filed March 18, 1971, Ser. No. 125,585
Int. Cl. H05k *1/18, 3/32*
U.S. Cl. 317—101 CC 5 Claims

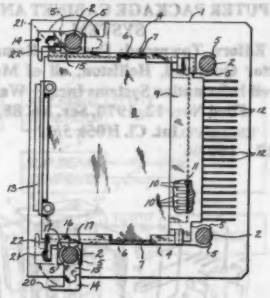
LC circuits are mounted on a board in rows of sockets along rows of pins on the same side of the board, and interconnected by strung wires. The sockets are interconnected with the pins transverse to the direction of the rows on the other side of the board.

3,691,430

CIRCUIT BOARD ASSEMBLY WITH POSITIVE LATCH

Lawrence F. Freitag, Bayside, Wis., assignor to Allen-Bradley Company, Milwaukee, Wis.

Filed April 29, 1971, Ser. No. 138,419
Int. Cl. H02b *1/02*
U.S. Cl. 317—101 DH 7 Claims



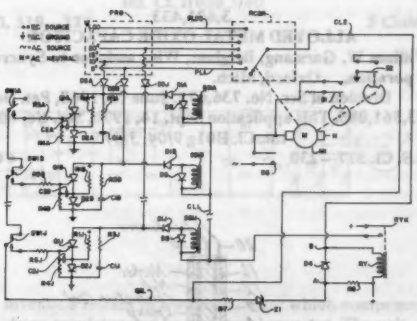
A circuit board assembly has a series of sets of parallel spaced and oppositely disposed guide rails with integral mounting portions that are snapped on and partially encircle support bars. Each set of guide rails supports an electrical connector for a circuit board at one end. Mirrored longitudinal channels are formed in the guide rails. Latch members are adapted to be pivotally affixed to said support bars between adjacent sets of said guide rails in order that they may be moved to an open or closed position. When in an open position the latch members allow the circuit boards to be individually inserted into the mirrored channels of the sets of guide rails, and into engagement with the corresponding electrical connector. The latch members are then pivoted to a closed position with overlying portions of the latch members obstructing the channels of the guide rails to prevent unintentional removal of the inserted circuit boards.

3,691,431

INTERLOCKED SELECTION CONTROL APPARATUS

William M. Hendrickson, St. Louis, and Patrick J. Davis, Florissant, both of Mo., assignors to UMC Industries, Inc., New York, N.Y.

Filed Sept. 1, 1971, Ser. No. 176,855
Int. Cl. H03k *17/06*
U.S. Cl. 317—137 8 Claims



Apparatus especially useful for vending selection control. A plurality of triggerable semi-conductor current switching devices are provided for selectively energizing a plurality of vend control means each causing the dispensing of a respective article. The switching devices are triggered by respective ones of selector switches which draw current through a source having a predetermined source impedance. A respective diode

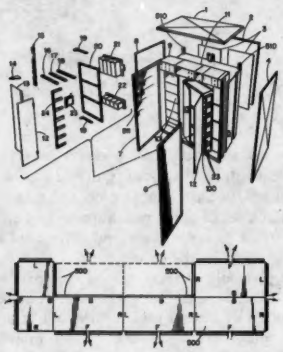
connects each of the switching devices to the source so that conduction through any one of the devices immediately shunts the source thereby preventing triggering of any of the other devices, preventing selection of more than one article for each vend operation.

3,691,432

COMPUTER PACKAGE CABINET AND MODULE SYSTEM

John Eric Edfors, Townsend; Domenic Romano, Chelmsford, and Victor Quattrini, Holliston, all of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Nov. 12, 1970, Ser. No. 88,899
Int. Cl. H05k *5/02*
U.S. Cl. 317—100 **10 Claims**



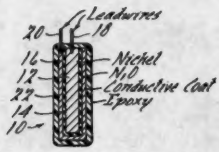
The present invention relates in general to improved modular means for packaging electronic equipment and more particularly to the application of such packaging to the computer. The modular packaging means house a multiplicity of plug-in units, electrical connectors, associated wiring and cooling means and can be arranged in a system of abutting modular package means characterized (a) by the one sided access of each of the plug-in units and their appurtenances, (b) for their easy testing and replacement in the field from outside the package means and without disturbing the position of any of the modular package means, (c) for their space saving characteristics, (d) and by the flexibility of internal electrical connection of the plug-in units from plug-in unit to plug-in unit and from modular package to modular package.

3,691,433

ALLOYED METAL OXIDE CAPACITOR

William W. Garstang, Belgium, Wis., assignor to Syncro Corporation, Oxford, Mich.

Division of Ser. No. 736,672, June 13, 1968, Pat. No. 3,561,085. This application Sept. 14, 1970, Ser. No. 80,516
Int. Cl. H01g *9/04, 3/075*
U.S. Cl. 317—230 **4 Claims**



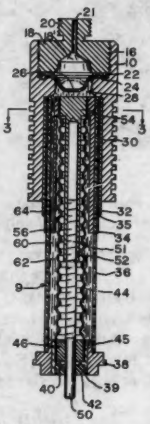
A novel construction for a nickel oxide capacitor including the use of a novel alloy and a novel method of manufacturing a nickel oxide capacitor.

3,691,434

HIGH TEMPERATURE VARIABLE CAPACITOR

Frank G. J. Mezey, Centerport, N.Y., assignor to American Technical Ceramics, Huntington Station, N.Y.

Filed June 28, 1971, Ser. No. 157,099
Int. Cl. H01g *1/08*
U.S. Cl. 317—243 **9 Claims**



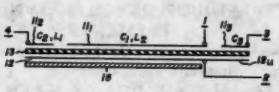
A variable capacitor has an electrically conductive piston secured to one end of a metal bellows in a dielectric cylinder which carries a metal sleeve and comprises a first electrical terminal. The second end of the bellows is fixed to a second electrical terminal which closes one end of the cylinder. A liquid dielectric fills the chamber inside the cylinder and flows through a groove in the piston when the piston moves axially contracting or expanding the bellows. A flexible diaphragm closes the second end of the chamber.

3,691,435

WOUND IMPEDENCE DEVICE

Oliver H. Winn, Cazenovia, N.Y., assignor to General Electric Company

Filed Nov. 23, 1970, Ser. No. 91,674
Int. Cl. H01g *1/00, 1/16*
U.S. Cl. 317—256 **3 Claims**



A cap-reactor power groove ballast circuit of the type including first and second, spaced-apart, elongated tape-like conductive foils having intervening layers of electrical insulation rolled together to form a compact cylindrical roll having combined capacitor-inductor-reactor characteristics. One of the spaced-apart conductive foils has its width separated into multiple, electrically isolated, strip-like separate foil areas coacting with the common remaining conductive foil to function in the manner of multiple capacitor-inductor components electrically interconnected in circuit relationship. By appropriate connection of terminal tap points to the structure, the device can be made to operate in the manner of a power groove ballast circuit having improved wave shaping characteristics.

3,691,436

ELECTRICAL CIRCUIT ELEMENT HAVING A DIAGONAL ABUTMENT STRIP, AND METHOD OF MANUFACTURING THE SAME

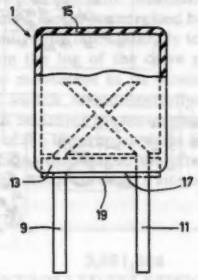
Andries Cornelis Maijers, and Jacob Ketel, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 11, 1971, Ser. No. 142,240

Claims priority, application Netherlands, May 22, 1970, 7007403

Int. Cl. H01g 1/03

U.S. Cl. 317—261 4 Claims



An electrical circuit element having an abutment strip of insulating material extending diagonally between the connecting wires and engaging, with its flat sides, the connecting wires and more or less adjoining the circuit element. The circuit element is covered by an insulating lacquer extending from the circuit element up to the abutment strip, but does not cover that side of the abutment strip which is remote from the circuit element.

3,691,437

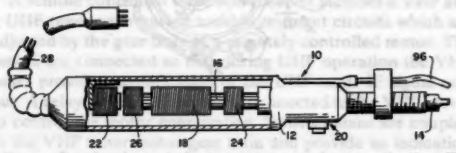
CONTROL MEANS FOR ELECTRIC TOOLS

Arne Hilding Andersson, 5 Videgaten, and Lennart Axel Duren, 23 Fagelgaten, both of Nyashamn, Sweden

Continuation-in-part of Ser. No. 9,703, Feb. 9, 1970, abandoned. This application Oct. 4, 1971, Ser. No. 186,260

Int. Cl. H01v 9/00

U.S. Cl. 318—118 9 Claims



A magnetostrictive transducer is vibrated at an ultra-sonic frequency by a driver winding supplied with energizing current from a generator, the output level of which is changed through a signal responsive device. The oscillating magnetic field of the driver winding is disturbed by short-circuiting of a control winding in the field. The disturbance is sensed by detector means to produce a signal fed to the signal responsive device.

3,691,438

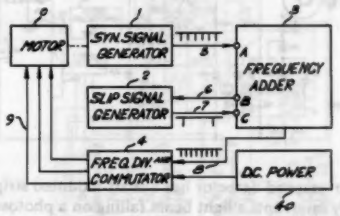
SIGNAL GENERATOR FOR ELECTRONIC COMMUTATION OF A MOTOR

Robert Favre, 36 Rue du Servan, 1000, Lausanne, Switzerland

Continuation-in-part of Ser. No. 674,968, Oct. 12, 1967, abandoned. This application July 6, 1970, Ser. No. 52,669

Int. Cl. H02k 29/00

U.S. Cl. 318—138 8 Claims



Control signals for electronic commutation of an electric motor have three related frequencies, namely a "synchronous" frequency proportional to the speed of rotation of the motor, a control or "resultant" frequency representing the frequency of pulses controlling commutation of the motor and hence characteristic of the rotation or commutation of the motor field and a "slip" frequency representing the difference between the "resultant" frequency and the "synchronous" frequency and hence characteristic of the "slip" of the rotor of the motor with respect to the rotation or commutation of the motor field. A signal generator for controlling the commutation of an electronically commutated motor comprises means for individually generating two of these three characteristic frequencies and means for electronically deriving the third characteristic from the other two.

3,691,439

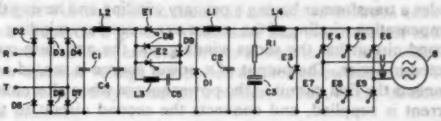
CONTROL ARRANGEMENT FOR A THREE PHASE MOTOR WITH INTERMEDIATE D.C. REGULATION

Arne Jensen, and Tom Kastrup Petersen, both of Nordborg, Denmark, assignors to Danfos A/S., Nordborg, Denmark

Continuation of Ser. No. 792,744, Jan. 21, 1969, abandoned. This application Jan. 28, 1971, Ser. No. 110,666

Int. Cl. H02d 5/40

U.S. Cl. 318—227 5 Claims

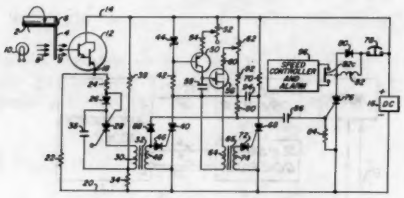


The invention relates to a motor control which comprises a D.C. voltage regulator and an inverted converter. The voltage regulator has a periodically actuatable switch and filter means are provided between the voltage regulator and the converter for smoothing the voltage from the regulator. A series arranged resistor and condenser are disposed in parallel to the condenser of the filter means for damping pulsations in the voltage regulator output which cause motor torque fluctuations.

3,691,440
OVERSPEED DETECTOR

Logan D. Haddock, Provo, Utah, assignor to United States Steel Corporation

Filed April 16, 1971, Ser. No. 134,563
Int. Cl. A02p 5/16
U.S. Cl. 318—313 4 Claims

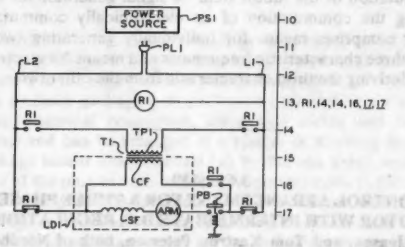


A shaft overspeed detector has a shaft-mounted strip which periodically interrupts a light beam falling on a photosensitive cell as the shaft rotates. An electrical circuit provides a time-based pulse for each interruption and if a second interruption occurs before the time-based pulse has risen to a cutoff level, a speed controller is activated.

3,691,441
POWER CONNECTION SELECTION APPARATUS

Werner Hasselbach, Ann Arbor, Mich., and Peter L. Pompili, Toledo, Ohio, assignors to Sel-Con, Inc., Ann Arbor, Mich. and Verti-Case, Inc., Toledo, Ohio, part interest to each

Filed Feb. 19, 1971, Ser. No. 116,934
Int. Cl. H02k 23/64
U.S. Cl. 318—441 12 Claims



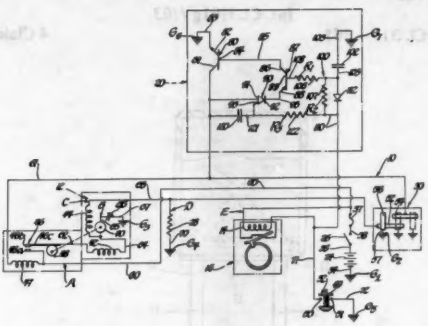
In a preferred embodiment the invention is illustrated in apparatus for improving the power factor and efficiency of a universal motor when the motor is to be used with either an alternating or direct current power source. The universal motor disclosed has a series winding, a compensating winding and an armature. The series winding and the compensating winding are connected in series with the armature. A first circuit includes a transformer having a primary winding and having the compensating winding of the motor as a secondary winding. A second circuit has the series winding and the armature connected in series. The output of a power source is sensed and connects the first circuit to the power source when alternating current is supplied, and connects the second circuit to the power source when direct current is supplied.

3,691,442
CONTROL CIRCUIT FOR AUTOMATICALLY SHUTTING OFF THE WINDSHIELD WIPERS SUBSEQUENT TO WASHER OPERATION

Leonard J. Sheldrake, Noblesville, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 25, 1971, Ser. No. 174,603
Int. Cl. H02p 3/16
U.S. Cl. 318—443 3 Claims

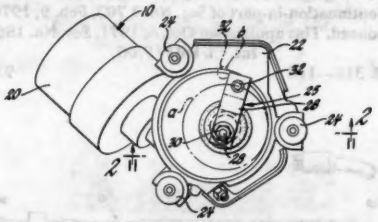
In a preferred form, this disclosure relates to an electrical control system having a control circuit means for initiating conjoint operation of a windshield wiper unit and washer unit for an automotive vehicle in response to momentary depression of a washer button switch and for automatically shutting off the wiper unit subsequent to the cessation of washer operation. The electrical control system comprises a power source, an electric motor means, an electrically operated washer unit and a first control circuit means including a manual switch for effecting either low or high speed continuous operation of the wipers and a second control circuit means including a manually operated washer switch for controlling operation of the washer unit and for initiating conjoint operation of the wiper unit with the wiper unit shutting off automatically subsequent to the cessation of washer operation.



3,691,443
WINDSHIELD WIPER MECHANISM

Dale F. Hammer, Bellbrook, and Leo E. Bischoff, Centerville, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 1, 1971, Ser. No. 176,824
Int. Cl. H02p 3/00
U.S. Cl. 318—443 3 Claims



This disclosure relates to an actuating mechanism for oscillating a windshield wiper through an outboard and inboard stroke during each cycle of operation during running operation and for moving the wiper to a depressed park position when wiper operation is being terminated. The actuating mechanism includes an electric motor, an energizing circuit for the electric motor including a park switch and a momentarily depressible manual on and off switch, a rotatable driving member connected with the motor, a variable throw crank means eccentrically journaled within the driving member and a coupling means for drivingly interconnecting the crank means to the driving member during running operation to

oscillate the wipers through its cycle of operation and for disconnecting the driving connection therebetween to effect an increase in the throw of the crank means to move the wiper to the depressed park position when wiper operation is being terminated. The coupling means includes a drive pawl having an upstanding lug and a latch supported for limited universal movement and which is biased toward a first position for intercepting the lug of the drive pawl to effect interruption of the driving connection between the crank means and the driving means to substantially arrest rotation of the crank means whereby continued rotation of the driving member will vary the throw of the crank means which in turn will move the latch means to open the park switch to de-energize the wiper motor when the throw of the crank means is substantially a maximum. The electric motor is energized by a relay means which is operable to move the latch laterally to a position where it is disengaged from the lug of the drive pawl and releases the park switch for movement to its closed position. When the manual on-off switch is momentarily depressed and then released a latch retarding means engages the latch to retard the movement of the latter towards its first position as the lug of the pawl is being disengaged therefrom whereby energization of the wiper motor through a single cycle of operation is assured.

3,691,444

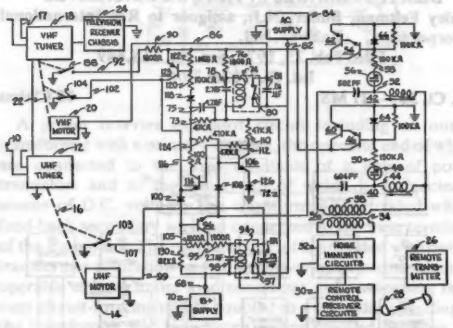
REMOTE CONTROLLED TELEVISION TUNER MOTOR SWITCHING CIRCUIT

Lyle Bruce Juroff, Greenwood, and Lawrence Mark Lunn, Indianapolis, both of Ind., assignors to RCA Corporation

Division of Ser. No. 36,149, May 11, 1970, Pat. No. 3,648,135. This application Oct. 12, 1971, Ser. No. 188,068

Int. Cl. A05d *3/00*

U.S. Cl. 318—467 **7 Claims**



A remote controlled television receiver includes a VHF and a UHF tuner each having tunable resonant circuits which are adjusted by the gear train of a remotely controlled motor. The tuners are connected so that during UHF operation the VHF tuner provides amplification of the UHF tuner IF signal output. A relay switch is operatively connected to the VHF motor to control the motor energization. Switch means are coupled to the VHF tuner motor gear train and provide an indication when the VHF tuner is adjusted for amplification of the UHF tuner IF signal output. A bistable multivibrator is coupled to the switch means in a manner so that the multivibrator changes states in response to the switch indication. A relay winding current control means responds to the change in state to prevent current from flowing into the relay winding. This causes the relay switch to open and de-energizes the VHF motor. A second relay switch is operatively connected to the UHF motor to control the motor energization. A second relay current control means is connected to permit a flow of current through the second relay winding only when the switch indication is present.

3,691,445

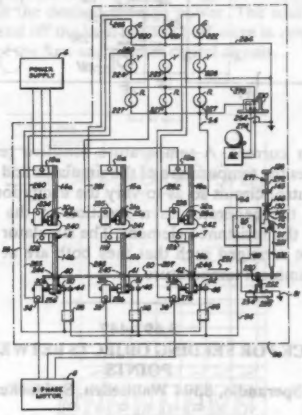
EXCESSIVE MOTOR LOAD INDICATOR AND VOLTAGE CUT-OUT DEVICE

Thomas Moore, 8737 Leavitt Road, Elyria, Ohio

Continuation-in-part of Ser. No. 74,277, Sept. 22, 1970, which is a continuation-in-part of Ser. No. 773,923, Nov. 6, 1968, Pat. No. 3,530,337. This application March 4, 1971, Ser. No. 121,028

Int. Cl. H02h *7/08*

U.S. Cl. 318—472 **3 Claims**



An overload indicator and protector for a three-phase AC motor wherein there are three pairs of bimetallic elements; each pair being incorporated in a switch and in series with a phase lead of the three phase AC voltage source and a motor lead. One of each pair of the bimetallic elements normally maintains its respective switch in a closed position and opens automatically, or bends toward an open condition, due to the heating effects of current passing therethrough when the motor is in an overload condition. The other bimetallic element of each pair is adapted to close a circuit which causes warning indicia to be activated in the event that the current passing therethrough exceeds a predetermined amount less than that required to open the other switch of the bimetallic pair. A circuit is included in the protector which is responsive to the opening, or bending, of the first mentioned of the pair of bimetallic elements which energizes a solenoid which, in turn, simultaneously causes each of said first mentioned bimetallic elements to open in a quick acting movement. A movable catch element mechanically secures a solenoid so that the switches are retained in the open position until the catch element is manually reset. Movement of the solenoid also opens a switch in a further circuit which secures current to the solenoid after it has opened the switches and is held by the catch element. Further indicia means is connected between each of the switches at a ground to indicate that the protector is in a tripped condition, and still further indicia means is provided to show whether voltage is supplied to each electrical phase. The indicia means may be lamps, a buzzer, or bell, or any combination thereof.

3,691,446

TRACTION MOTOR TEMPERATURE CONTROL OF LOCOMOTIVE POWER

Max Ephraim, Jr., Evergreen Park, and Earl D. Smith, Naperville, both of Ill., assignors to General Motors Corporation, Detroit, Mich.

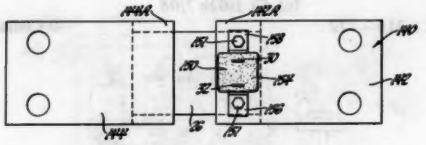
Division of Ser. No. 26,861, April 9, 1970. This application June 30, 1971, Ser. No. 158,470

Int. Cl. H02p *5/22*

U.S. Cl. 318—472 **1 Claim**

A system for controlling the power output of the generator of a locomotive as a function of the temperature of the trac-

tion motors connected to the generator. The system utilizes an electrical heater element connected in series with at least one traction motor and the heater generates an amount of heat which is a function of the amount of current being supplied to the traction motor. The heater element forms part of a simulator such that the temperature developed by it simulates the operating temperature of the traction motor for a given traction motor current. A temperature sensitive resistance element senses the temperature of the simulator and is connected with a control circuit so as to vary the excitation and output power of the generator as a function of the temperature sensed by the resistance element. The simulator and traction motors are arranged such that they both are at substantially the same ambient temperature.



3,691,447

DEVICE FOR FEEDING OBJECTS BETWEEN TWO POINTS

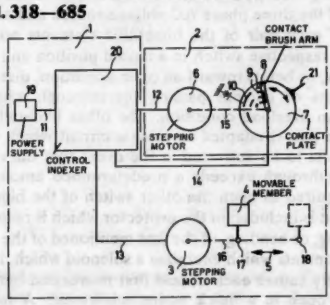
Gottfried Sperandio, 8304 Wallisellen, Steinackerweg 3, Switzerland

Filed Sept. 28, 1970, Ser. No. 75,946

Claims priority, application Germany, July 9, 1970, P 20 34 003.8

Int. Cl. G05b 19/40

U.S. Cl. 318—685 **3 Claims**



In the present stepping mechanism two stepping motors are driven in synchronism with each other by drive pulses, the supply of which is controlled by an output pulse from an electromechanical comparing device which is stepped by one of the two motors whereas the other motor steps a movable member, for example, a tool support from one point to another.

3,691,448

AUTOMATIC BATTERY CHARGING SYSTEMS FOR A VARIABLE LOAD

Gilbert Harold Milward, North Baddesley, England, assignor to Bardic Systems Limited

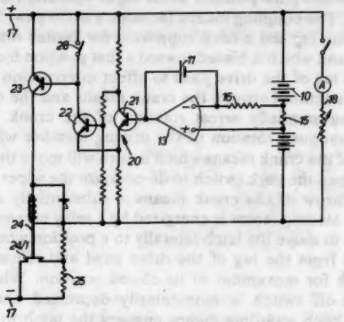
Filed Oct. 7, 1970, Ser. No. 78,699

Claims priority, application Great Britain, Oct. 9, 1979, 49633/69

Int. Cl. H02j 7/04

U.S. Cl. 320—39 **3 Claims**

In an automatic battery charging system a small pilot cell is connected in the feedback circuit of an amplifier of which the input is proportional to both the direction and magnitude of the main battery current. Thus the pilot cell is charged at a rate proportional to the discharge of the main battery and vice versa, and so arranged to be partially charged when the main battery is fully discharged, and fully discharged when the main battery is fully charged, and in the latter condition the decreased voltage of the pilot cell causes the amplifier output to terminate or modify the charge. The charging current may be controlled by a transistor which also adjusts it to provide the load current if and when the supply is available.



ERRATUM

For Class 321—18 see:
Patent No. 3,691,412

3,691,449

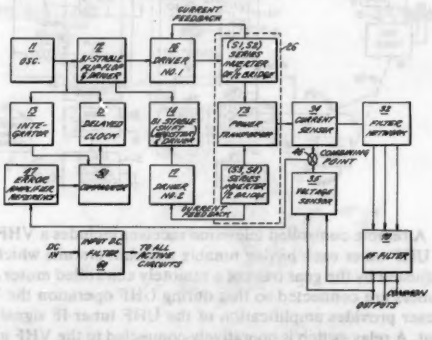
STATIC INVERTER HAVING AUTOMATIC MEANS FOR PROVIDING A HIGHLY REGULATED A.C. OUTPUT DESPITE CHANGES IN THE INPUT D.C. LEVEL

Stanley Feltman, Butler, N.J., assignor to Rea International Corporation, Rahway, N.J.

Filed Feb. 25, 1971, Ser. No. 118,849

Int. Cl. H02m 7/00

U.S. Cl. 321—27 MS **15 Claims**



An inverter for supplying AC power from a DC input. The DC input is employed to operate a pulse generator functioning at a frequency which is twice the desired AC frequency. A pair of bistable multivibrators are continuously triggered by the pulse generator in such a manner that the state of one multivibrator controls the change of state of the remaining multivibrator. The outputs of the bistable multivibrators are employed to operate a pair of driver circuits whose outputs are transformer coupled into a bridge circuit to develop a quasi-square-wave output whose fundamental frequency is the frequency of the desired AC output signal. The quasi-square-wave output is filtered to obtain the AC signal which is monitored by voltage and current sensing circuits to yield a combined output signal representative of the RMS value of the

output AC signal. This resultant signal is utilized to establish a reference level developed by a comparator circuit.

The DC input level of the static inverter is employed to charge an integrator circuit which is reset every half-cycle of the output AC frequency. When the output of the integrator exceeds the reference level, a signal is developed to trigger the slave multivibrator to establish a timing relationship between the changeover states of the multivibrators which functions to instantaneously regulate the magnitude of the output signal regardless of changes in the input DC level. This is made possible by use of the integrator circuit which functions so that a constant fundamental frequency content of the quasi-square-wave is held at the desired frequency regardless of changes in the DC input, thus providing instantaneous compensation for variations in the DC line and inherent rejection of conducted audio frequencies on the DC line.

3,691,450

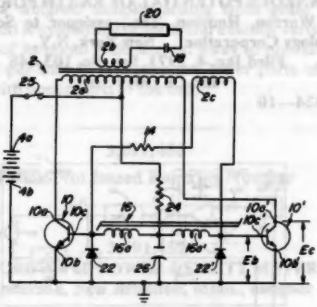
POWER INVERTER OSCILLATOR CIRCUIT

Jay A. Cox, Rolling Hills Estates, Calif., assignor to Gulton Industries, Inc., Metuchen, N.J.

Continuation-in-part of Ser. No. 20,609, March 18, 1970. This application June 14, 1971, Ser. No. 152,615

Int. Cl. H02m 7/52

U.S. Cl. 321—45 R 10 Claims



A power inverter oscillator circuit including an output transformer with a primary winding, the opposite end of which are connected to the load terminals of a pair of power transistors and to the center-tap of which is connected a source of D.C. voltage. The transformer is provided with a feed-back secondary winding connected to the base terminals of the transistors. The oscillator circuit is provided with output transformer saturation and current overlap prevention means operable at least under load conditions and comprising resonant circuit-forming means coupled to a secondary winding of the transformer and inductance means coupled between the bases of the transistors for producing a sinusoidal-like waveform of voltage in the transformer windings, effecting the alternate switching of said transistors into conduction without the saturation of said output transformer, and effecting the complete cessation of flow of current through one of the transistors before current begins to flow in the other switch device.

3,691,451

Patent Not Issued For This Number

3,691,452

CONTROL OF AC POWER BY A LOGIC COMPARATOR

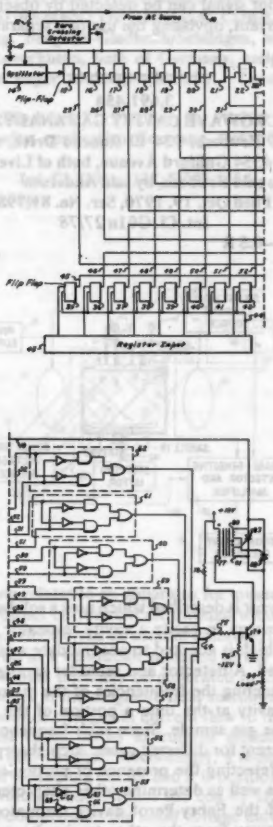
Gabriel A. Aguiar, Riverdale, N.Y., assignor to The Watson Union Telegraph Company, New York, N.Y.

Filed May 3, 1971, Ser. No. 139,690

Int. Cl. G05f 3/04

U.S. Cl. 323—19 4 Claims

Apparatus for controlling the amount of power applied to a given load from a periodic voltage source, such as an AC source, indirect response to a digital control signal. The method involves a principle of operation in which the AC source is applied to the load over measured time portions of the successive periods of the source voltage to obtain the desired average power applied to the load. Equal increments of time are measured in each half-wave of the source and a first digital signal is generated corresponding to the time elasped from the zero voltage crossing point. A second digital signal is generated corresponding to a time portion of the source's half-wave over which the source voltage ought to be applied to the load to obtain the desired average power. The source is then switched on and off the load in each half-wave in response to a comparison of the first and second digital signals.



3,691,453

COMPACT MICROWAVE SPECTROMETER

Louis William Rupp, Jr., Warminster, Pa., and Walter Michael Walsh, Jr., Berkeley Heights, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

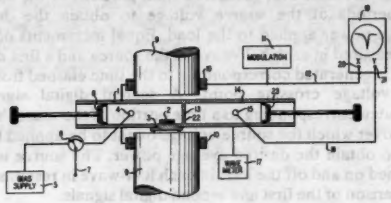
Filed April 28, 1970, Ser. No. 32,538

Int. Cl. G01n 27/78

U.S. Cl. 324—0.5 R 2 Claims

The development of a simple and inexpensive microwave spectrometer for the study of spin resonance phenomena has been made possible by the inclusion of a solid state microwave energy source within the same resonant cavity as the sample to be investigated. A hypersensitive condition of oscillation of the microwave source has been found which leads to a spectrometer rivaling the sensitivity of much more complex and expensive conventional apparatus. Development models con-

structed using Gunn type microwave oscillator diodes show that, in addition to the use of conventional microwave detection, the output signal can be detected by observation of the diode bias current, obviating the use of a separate microwave detector.

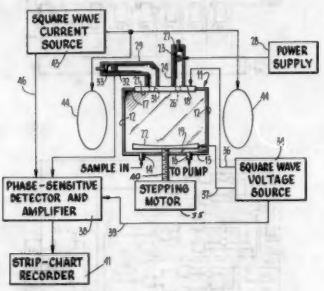


3,691,454

MICROWAVE CAVITY GAS ANALYZER

Lawrence W. Hrubesh, 934 El Rancho Drive, and Roger E. Anderson, 4354 Guilford Avenue, both of Livermore, Calif., assignors to said Hrubesh, by said Anderson

Filed Oct. 19, 1970, Ser. No. 81,798
Int. Cl. G01n *27/78*
U.S. Cl. 324—0.5 R **9 Claims**



A gas analyzer is described which uses a solid state source of microwave energy to excite a cavity resonator of the Fabry-Perot type which is adapted to accomodate a sample of a gas to be analyzed. A detector and recorder arrangement is provided for detecting the frequencies of the microwave energy within the cavity at the time a portion of the energy is absorbed by the gas sample. Since such frequencies of absorption are different for different gases, such absorption provides a means of detecting the presence of particular gases within the sample as well as determine other characteristics thereof. One plate of the Fabry-Perot cavity resonator is moveable toward and away from the other to simultaneously vary the resonant frequency of the cavity and the output frequency of the solid state source.

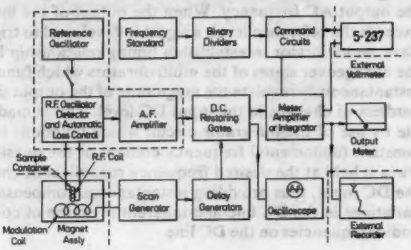
3,691,455

MEASURING METHOD FOR ANALYZING MATERIAL CONTAINING FAT AND WATER

Tauno V. Moisio, and Matti S. Kreula, both of Helsinki, Finland, assignors to Valio-Meijerien Keskusosuuslike, Helsinki, Finland

Filed Jan. 11, 1971, Ser. No. 105,567
Claims priority, application Finland, Jan. 28, 1970, 23970
Int. Cl. G01n *27/78*
U.S. Cl. 324—0.5 R **7 Claims**

In materials containing fat and water simultaneously the water share is determined separately by making use of an ordinary NMR analyzer which is usually capable of measuring only the total sum of said components. In such analyzers the strength of the magnetic field of the r.f. coil, in which the sample is inserted, is kept constant by a correction amplifier controlling current flow through the r.f. coil. The r.f. losses of said coil depend essentially on the water content of the sample but not on the fat content and the water share is separately determined by using the output of said correction amplifier preferably by directly measuring this output.

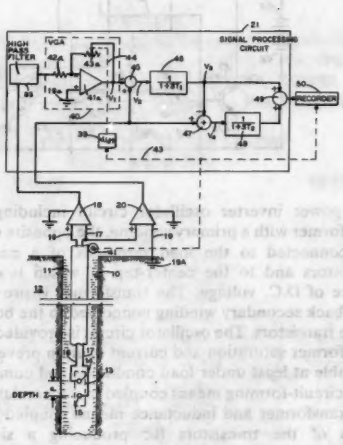


3,691,456

METHODS AND APPARATUS FOR INVESTIGATING THE SPONTANEOUS POTENTIAL OF EARTH FORMATIONS

John P. Warren, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Jan. 4, 1971, Ser. No. 103,448
Int. Cl. G01v *3/18*
U.S. Cl. 324—10 **5 Claims**



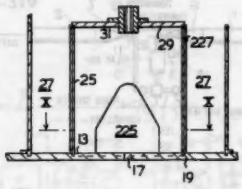
In accordance with illustrative embodiments of the present invention, a technique is disclosed for substantially eliminating noise from measurements of the spontaneous potential made in a borehole drilled into the earth. An exploring device in the borehole carries two closely spaced electrodes and the potential is measured between these two electrodes to provide a first differential type measurement as a function of the movement of the electrodes. A converting circuit converts this first measurement from a function of such movement to a function of time. The potential between one of these two electrodes and a remote point is measured to produce a second measurement. The converted first measurement and the second measurement are combined to provide a substantially error free spontaneous potential measurement. To compensate for errors produced in the converting circuit by acceleration of the electrodes, the low frequency components of the first measurement are eliminated prior to combining the two measurements.

3,691,457

MOISTURE MEASUREMENT OF GRAIN

Johannes Cornelius Kriellaars, St. Boniface, Manitoba, Canada, assignor to CAE Industries Ltd.

Filed Aug. 28, 1970, Ser. No. 67,683
Int. Cl. G01r 27/26
U.S. Cl. 324—61 R 13 Claims



Apparatus for the measurement of moisture in grain and other material. It weighs the sample as added, to ensure a constant sample weight; it dumps the sample in a predictable manner into a capacitive cell; it effects a capacitive measurement and compensates for the temperature of the specimen. The measurement of capacitance provides a measure of the moisture content. In order to compensate for variations in the volume of a weighed sample, arising from grain size, the capacitive cell is cylindrical in form and extends vertically, but lower parts of its metal walls are cut away to provide a lesser capacitance per unit height over the lower parts of the cell compared with upper parts of the cell.

3,691,458

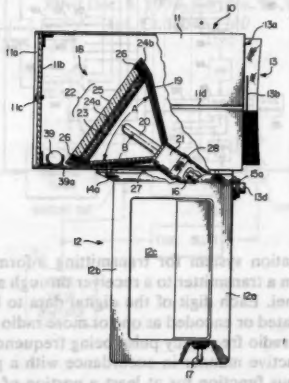
Patent Not Issued For This Number

3,691,459

MICROWAVE POWER DENSITY METER

Harold C. Anderson, New Brighton, Minn., assignor to Litton Systems, Inc.

Filed Oct. 23, 1970, Ser. No. 83,314
Int. Cl. G01r 23/04
U.S. Cl. 324—95 10 Claims



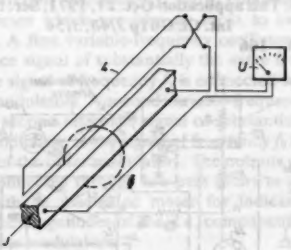
A power density meter for monitoring the energy density of an electromagnetic field, having a first radiant field and a stationary field, in the near-zone region of an electromagnetic apparatus. The power density meter comprises an antenna arrangement having a conical horn, a stub, an output portion and an input portion. The electromagnetic wave energy of the radiant field is received by the horn and stub. The input portion is located in front of the horn and comprises a sheet of lossy material sandwiched between a pair of thin sheets of plastic. When the lossy material is brought into the stationary field, a current is induced into the material which is representative of the electromagnetic energy of the stationary field. The current established in the lossy material generates a second radiant field which is additive to the first radiant field of the electromagnetic wave energy. The output portion includes a cryster detector receiving the combined electromagnetic energy from the first and second radiant fields. A circuit is provided for coupling the detector to a meter so that a signal representative of the value of the power density in the near-zone region may be displayed on the meter.

3,691,460

APPARATUS FOR THE NOISE-COMPENSATED MEASUREMENT OF HIGH D.C. CURRENTS

Walter Busing, Bergisch-Gladbach/Schildgen, and Wolfgang Gebauer, Leverkusen, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 7, 1970, Ser. No. 78,709
Claims priority, application Germany, Oct. 30, 1969, P 19 54 635.1
Int. Cl. G01r 1/38; H02h 1/04
U.S. Cl. 324—126 4 Claims



The invention relates to an apparatus for measuring current intensity in a direct current circuit through which much current flows, e.g., electrolysis of sodium chloride, by measuring the voltage drop in a conductor included in the high current circuit. Noise would normally be generated in the measuring circuit by changes in the magnetic field surrounding the conductor as a result of changes in current flow in the conductor and this would cause errors in current measurement corresponding to said changes. Accordingly, a multi-turn coil is included in the measuring circuit and it is positioned in such a way that the voltage induced into the coil by changes of the magnetic field compensates the noise voltage induced into the other part of the measuring circuit. The exact magnitude of the voltage induced into the coil is controlled by a variable resistor so that it can be equated to said noise voltage.

3,691,461

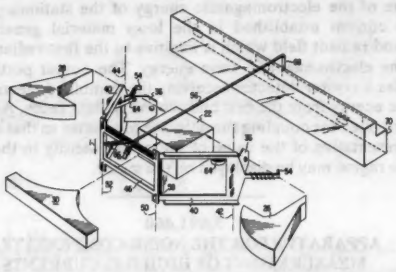
ELECTROMAGNETIC DEVICE

Virgil Erbert, Albuquerque, N. Mex., assignor to Rolamite, Incorporated, San Francisco, Calif.

Filed Oct. 29, 1970, Ser. No. 84,985
Int. Cl. G01r 1/16, 15/10
U.S. Cl. 324—151 R 12 Claims

An electromagnetic device in which a coil is mounted in a magnetic field for movement in proportion to the electrical current flowing in the coil. The magnetic air gap is divided into two sections with separated centers and the coil is supported for swinging movement in both arcuate sections of the magnetic field. The linkages supporting the coil are selected so that a pointer attached to the coil moves along a straight

line at a predetermined distance from the coil. The coil is continuous between the two sections of the magnetic field and the



resultant force due to current in the coil causes the coil to swing the pointer along a straight path a distance proportional to the current in the coil.

3,691,462

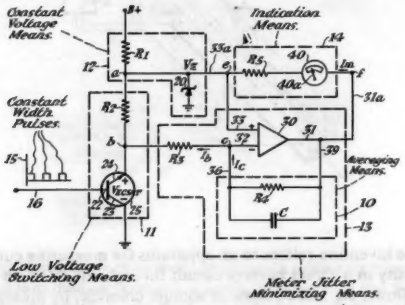
RATE PARAMETER INDICATOR HAVING METER MOVEMENT SMOOTHING AT LOW RATES

Reed H. Grundy, Murrysville, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Division of Ser. No. 879,716, Nov. 25, 1969, Pat. No. 3,638,115. This application Oct. 21, 1971, Ser. No. 191,412

Int. Cl. G01p 3/48, 3/54

U.S. Cl. 324—166 **15 Claims**



This disclosure relates to a rate parameter indicator which uniquely allows extremely accurate measuring and indicating of a rate parameter at low rates due to provision of a smooth linear signal to an indication meter circuit. The system incorporates a low voltage drift switching circuit which is coupled to a constant-width pulses, the frequency of which is proportional to a rate parameter. A meter jitter minimizing circuit is electrically coupled to the low voltage drift switching circuitry, as well as the constant voltage source, and includes an averaging circuit which allows the meter jitter minimizing means to provide the aforementioned smooth linear signal to the indication meter circuit in a unique manner.

3,691,463

LEAKAGE WAVEGUIDE LINE FROM WHICH ENERGY IS CONTINUALLY LEAKED ALONG THE PATH FOLLOWED BY THE LEAKAGE WAVEGUIDE LINE

Tsuneo Nakahara, and Kenichi Yoshida, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

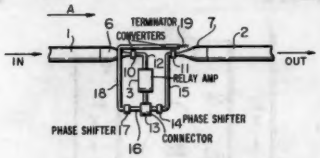
Filed Oct. 9, 1970, Ser. No. 79,414

Claims priority, application Japan, Oct. 9, 1969, 44/80918

Int. Cl. H04b 7/20

U.S. Cl. 325—1 **3 Claims**

A leakage waveguide line in which a circular to rectangular converter is connected to the end of a circular leakage guide. A relay amplifier is connected to the rectangular waveguide, one end of which is connected to the converter. Most of the power in the output of the relay amplifier is transmitted to another circular leakage waveguide by a circuit comprising a



phase shifter, a rectangular to circular converter and tapered tubes. The rectangular leakage waveguide is positioned to cover the two tapered tubes and the top portion of the relay amplifier.

3,691,464

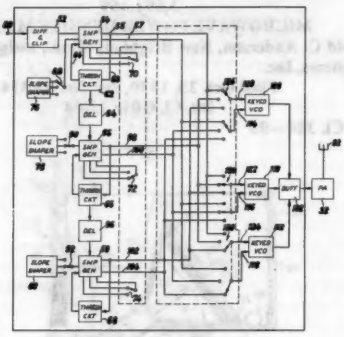
ASYNCHRONOUS, SWEPT FREQUENCY COMMUNICATION SYSTEM

David S. Dayton, Acton, and Alfred L. Girard, Billerica, both of Mass., assignors to Technical Communications Corporation, Lexington, Mass.

Continuation-in-part of Ser. No. 518,901, Jan. 5, 1966, abandoned. This application Nov. 25, 1968, Ser. No. 789,631

Int. Cl. H04j 7/00

U.S. Cl. 325—55 **14 Claims**

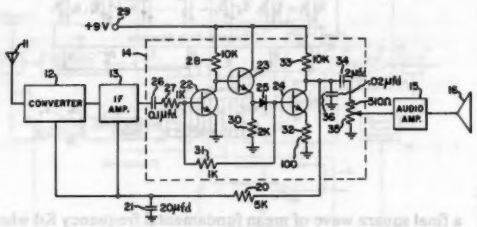


A communication system for transmitting information in digital form from a transmitter to a receiver through a noisy or disturbed channel. Each digit of the digital data to be transmitted is modulated or encoded as one or more radio frequency pulses, each radio frequency pulse being frequency modulated in a distinctive manner in accordance with a predetermined continuous function for at least a portion of its duration. The receiver is constructed to uniquely receive data so modulated or encoded. Two embodiments are described. In one embodiment the data to be transmitted is in the form of pulses and each data pulse is encoded into a plurality of frequency modulated radio frequency pulses. In a second embodiment the data is a series of "ones" and "zeros" and each one and zero is represented by a pulse of radio frequency energy. Each pulse is frequency modulated in a distinctive manner to identify it as a "1" or a "0."

3,691,465
LOW LEVEL AM DETECTOR AND AUTOMATIC GAIN CONTROL NETWORK

Robert I. McFadyen, 4892 South Salina St., Syracuse, N.Y.

Continuation-in-part of Ser. No. 5,819, Jan. 26, 1970, abandoned. This application Dec. 14, 1970, Ser. No. 97,680
Int. Cl. H04b 1/16
U.S. Cl. 325—319 15 Claims

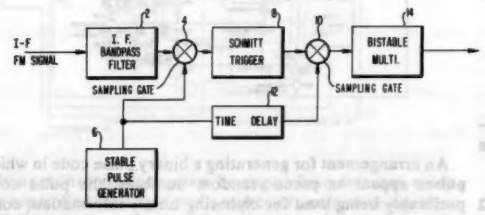


An improved low level AM detector and automatic gain control network is described. The network includes a degenerative feedback amplifier and a semiconductor detector diode connected at the output of the amplifier to rectify the amplified signal and the signal in the feedback path. The amplifier includes high voltage gain transistor input amplification and a unity gain transistor output amplifier in emitter follower configuration coupled to the detector diode. A subsequent stage produces amplified audio and a.g.c. signals. In one embodiment average detection is employed, while in another peak detection is employed. The network exhibits high detection sensitivity, improved detection linearity and permits highly sensitive a.g.c. operation. While using solid state active devices, both discrete and monolithic modes of circuit assembly are contemplated.

3,691,466
PHASE DISTORTIONLESS LIMITER

Marvin Richard Wachs, Bowie, Md., assignor to Communications Satellite Corp.

Filed Dec. 8, 1970, Ser. No. 96,121
Int. Cl. H04b 1/10
U.S. Cl. 325—347 3 Claims

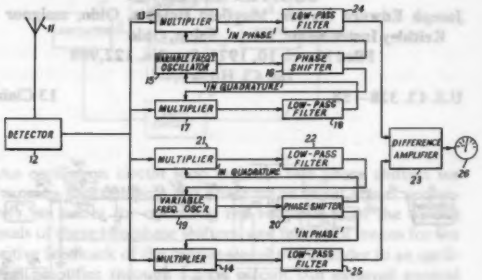


An FM limiter in which the FM signal is applied to a Schmitt trigger through a sample gate. The sampling time of the gate is controlled by a stable pulse generator. The output of the Schmitt trigger is sampled by a second gate and these samples are applied to a bistable multivibrator. The second gate is controlled by a delayed output from the stable pulse generator. The output of the bistable multivibrator is a frequency modulated square wave which is phase locked to the input FM wave form.

3,691,467
DEMODULATING APPARATUS

Michael Patrick Mansfield, Ingatestone, and Howard John Prangnell, Harlow, both of England, assignors to A. C. Cosser Limited, Harlow, Essex, England

Filed April 22, 1970, Ser. No. 30,782
Claims priority, application Great Britain, April 22, 1969, 20,607/69
Int. Cl. H04b 1/00
U.S. Cl. 325—363 6 Claims



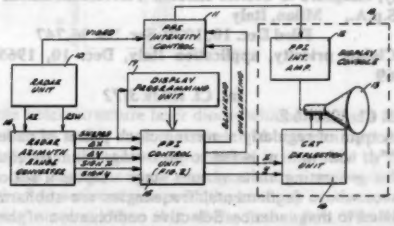
Demodulating apparatus for indicating the difference in depth of modulating of a carrier oscillation by two modulating signals of different frequencies f_1 and f_2 comprising an aerial with a detector which provides an input to two switching modulators. A first variable-frequency oscillator providing a first reference signal of substantially the same frequency and phase as the signal of frequency f_1 is connected to an input of one of the modulators. A second variable-frequency oscillator providing a second reference signal of substantially the same frequency and phase as the signal of frequency f_2 is connected to an input of the other modulators. The outputs of the modulators are connected through low-pass filters to a differential amplifier with an associated meter for indicating the difference in the magnitudes of the d.c. components of the outputs of the two modulators.

3,691,468
Patent Not Issued For This Number

3,691,469
COUNTERS WITH SCALING FOR DIGITAL CONTROL OF OBJECT'S POSITION

Phillip J. Joujon-Roche, Anaheim, and Loyd D. Smith, Fullerton, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed May 13, 1970, Ser. No. 36,737
Int. Cl. H03k 21/00
U.S. Cl. 328—46 13 Claims



A PPI deflection control system is disclosed employing synchronous counters for accumulating pulses representing Δx and Δy increments generated by an azimuth-range sweep converter. Range scaling to produce real time X and Y com-

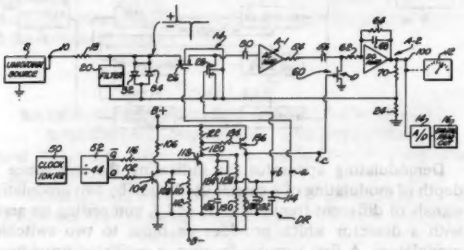
ponents of a radar sweep for PPI display is achieved by a control signal applied to one of several stages of lower order than fixed stages from which digital outputs are taken for deflection control. The control signal is ORed with the logic input signal for that stage to cause it to change state with each pulse to be counted. Scaled off-center display coordinates may be preset, and overflow may be detected to determine when the electron beam is off the PPI display surface.

3,691,470

CHOPPER AMPLIFIER

Joseph Edward Naylor, Mayfield Heights, Ohio, assignor to Keithley Instruments, Inc., Solon, Ohio

Filed March 10, 1971, Ser. No. 122,908
Int. Cl. H03k *5/04*
U.S. Cl. 328—58 **13 Claims**



A chopper amplifier is disclosed which is particularly applicable for use in conjunction with amplifying low level signals to higher level signals suitable for use with electrical measuring circuitry. The amplifier includes a modulator circuit for receiving a low level signal from an unknown source and providing therefrom an amplitude modulated AC signal at the modulating frequency and of an amplitude proportional to that of the low level signal. The modulated signal is then amplified by an AC amplifier and demodulated at the modulating frequency to obtain a DC output signal. The modulator circuit includes first and second switches, such as solid state switches, which serve when actuated to respectively apply either the low level signal or a reference level signal to the AC amplifier. A driver circuit is employed for purposes of alternately actuating the switches at the modulating frequency, and in such a manner that the switches are both deactuated during each switching cycle for a common off period during which neither the low level signal nor the reference level signal is applied to the AC amplifier. In this manner the chopper amplifier presents a high input impedance to the source to thereby minimize loading of the unknown source.

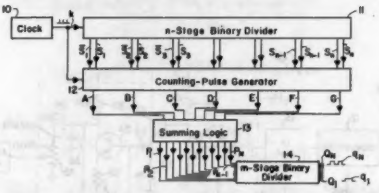
3,691,471

KEY MODULATED PULSE-TRAIN GENERATOR FOR TELECOMMUNICATION SYSTEM

Enrico Cicognani, and Evangelo Lyghounis, both of Milan, Italy, assignors to Societe Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy

Filed Dec. 10, 1970, Ser. No. 96,747
Claims priority, application Italy, Dec. 10, 1969, 25562 A/69
Int. Cl. H03k *3/72*
U.S. Cl. 328—6 Z **5 Claims**

A train of regularly recurring clock pulses of cadence $f_k = 2^{n+m}d$, with m n, is fed to an n-stage binary frequency divider generating at its various stage outputs a set of square waves whose fundamental frequencies are subharmonically related to that cadence. Selective combination of the original clock pulses with one or more of these square waves, at least one of them in negated form, by means of different NAND gates yields sequences of short equispaced pulses recurring at these subharmonic frequencies in mutually staggered relationship; thus, a superposition of all or less than all of these pulse sequences by means of OR gates produces up to $2^n-1 = N$ regular and irregular pulse groupings each recurring at the lowest subharmonic frequency $f_k/2^n = 2^m d$, the number K of pulses in these groupings ranging between 1 and N. Upon further subdivision by m cascaded flip-flops, there is obtained



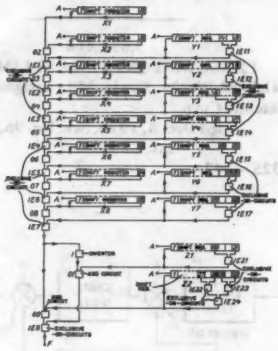
a final square wave of mean fundamental frequency Kd whose pulses may vary in length by only a small fraction of a cycle, depending upon the magnitude of m, and which may be frequency-modulated by the selective suppression of one or more constituent pulse sequences supplied to the corresponding OR gate.

3,691,472

ARRANGEMENT FOR THE GENERATION OF PULSES APPEARING AS PSEUDO-RANDOM NUMBERS

Erik Harald Bohman, Saltsjobaden, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed June 29, 1967, Ser. No. 650,102
Int. Cl. H03k *13/00*
U.S. Cl. 328—63 **5 Claims**

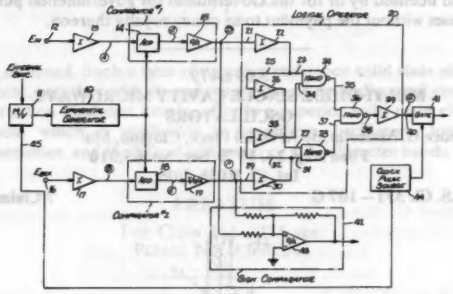


An arrangement for generating a binary pulse code in which pulses appear as pseudo-random numbers, the pulse code preferably being used for ciphering binary information, comprises a number of shift registers in which the output of one or several stages is connected to the input of the first stage of the register via logical circuits, the registers being cyclically shifted from a common pulse generator. The input of the first stage of each shift register is also connected to one input of a gate. The gates are interconnected so as to form a chain in which each gate has one input connected to the output of the preceding gate, and the other input being connected to the appertaining shift register. Each second gate is an AND-gate and each other second gate is an exclusive-OR-gate, the output of the last gate in the chain constituting the output of the arrangement.

3,691,473
VOLTAGE RATIO APPARATUS WITH LOGARITHMIC OUTPUT

John T. Boatwright, Hopkinton, N.H., assignor to Northeast Electronics Corporation, Concord, N.H.

Filed Aug. 19, 1968, Ser. No. 753,520
Int. Cl. G06g 7/24
U.S. Cl. 328—145 9 Claims

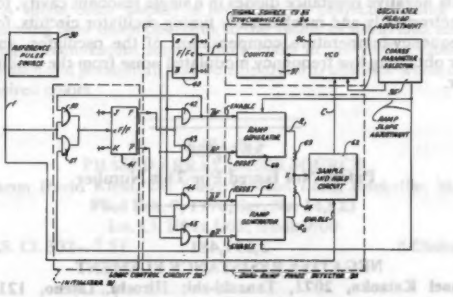


Both an input voltage signal and an adjustable reference voltage signal are compared with an exponential wave for providing, through a logic circuit, an output pulse whose width is proportional to the logarithm, either to the base 10 or to the natural base, of the ratio of the input signal to the reference signal. The output pulse controls a gate supplied with clock pulses for providing a digital output.

3,691,474
PHASE DETECTOR INITIALIZER FOR OSCILLATOR SYNCHRONIZATION

Ward M. Calaway, Sierra Madre, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 4, 1970, Ser. No. 95,206
Int. Cl. H03b 3/04
U.S. Cl. 331—1 A 13 Claims

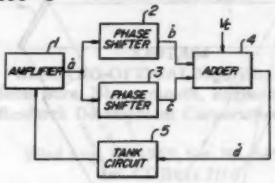


In a synchronization system having a phase detector, a voltage controlled oscillator, and a source of a reference signal, an initializer prevents the establishment of a regenerative mode. The output signal of the voltage controlled oscillator and the reference signal are applied to the inputs of the phase detector, which develops a control signal to adjust the period of the oscillator. The initializer couples the reference signal to the input of the phase detector either directly or inverted in phase, depending upon whether the reference signal leads the oscillator signal by less than 180° or lags the oscillator signal by less than 180°. As a result, the control signal does not change responsive to changes in the phase difference between the oscillator signal and the reference signal unless the synchronization system is operating in a degenerative mode.

3,691,475
VOLTAGE CONTROLLED OSCILLATOR

Katsuo Mouri, Yokohama; Gentaro Miyazaki, Fujisawa, and Hiroaki Nabeyama, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed June 21, 1971, Ser. No. 154,841
Claims priority, application Japan, July 24, 1970, 45/54404; July 24, 1970, 45/54406
Int. Cl. H03b 3/04, 5/36; H04n 9/46
U.S. Cl. 331—8 9 Claims

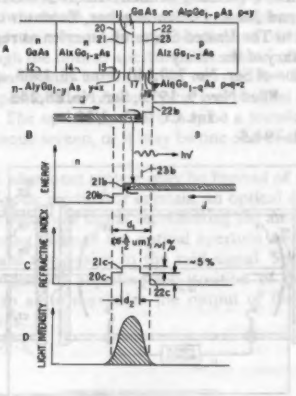


An oscillation circuit loop includes two phase shifters for advancing and delaying the phase of an input signal respectively, an adder for obtaining the vector sum of the output signals of these two phase shifters, and feedback means for the positive feedback of the output signal of the adder to an oscillation amplifier through a tank circuit. An external control voltage is applied to the adder so as to continuously vary the relative magnitude of the two signals added to each other by the adder. With an oscillator having such a construction, the degree of phase shift by the phase shifters and the value of Q of the tank circuit can be freely selected, and as a result, any desired sensitivity and phase control range can be freely obtained.

3,691,476
DOUBLE HETEROSTRUCTURE LASER DIODES

Izuo Hayashi, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 31, 1970, Ser. No. 103,252
Int. Cl. H01s 3/18
U.S. Cl. 331—94.5 16 Claims

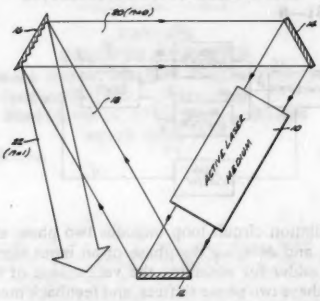


A double heterostructure laser diode, which includes a first narrow bandgap active region sandwiched between opposite conductivity type wider bandgap regions, is improved by the inclusion of a second narrow bandgap active region intermediate the first active region, with the bandgap of the second region being narrower than that of the first region. The first active region is preferably between about λ/2 and λ in thickness and serves to provide optical confinement, whereas the second active region may approach an electron diameter in thickness and serves to provide carrier confinement.

3,691,477
DIFFRACTION GRATING COUPLED LASER RING RESONATORS

Gareth M. Janney, Pacific Palisades, Calif., assignor to Hughes-Aircraft Company, Culver City, Calif.

Filed Sept. 4, 1970, Ser. No. 78,323
Int. Cl. H01s 3/00; G01b 9/02
U.S. Cl. 331—94.5 10 Claims

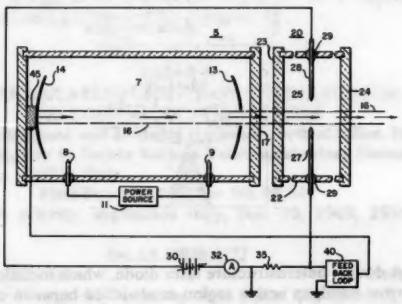


In the disclosed laser ring resonators a pair of mirrors and at least one diffraction grating are disposed relative to an active laser medium, such as CO_2, such that laser energy generated in the medium traverses a unidirectional closed circulation path through the medium. The diffraction grating has a groove spacing d related to the laser energy wavelength λ by $1 < \lambda/d < 2$ and diffracts a portion of the incident laser energy along the circulation path and another portion out of the circulation path. A wavelength selecting embodiment utilizes two diffraction gratings in the circulation path through the laser medium, while a wavelength selecting and axial mode selecting embodiment further employs an additional mirror to provide an axial mode selecting closed optical path partially coincident with a wavelength selecting closed optical path through the laser medium.

3,691,478
LASER ENERGY MONITOR AND CONTROL

Harold Jacobs, West Long Branch; Albert J. Kerecman, Asbury Park, and James D. Schumacher, Eatontown, all of N.J., assignors to The United States of America as represented by the Secretary of the Army

Continuation of Ser. No. 740,140, June 26, 1968, abandoned.
Filed Nov. 9, 1970, Ser. No. 88,245
Int. Cl. H01s 3/22
U.S. Cl. 331—94.5 6 Claims



An energy monitor for lasers which includes a chamber filled with a gas and containing electrodes to which an adjustable source of voltage is applied to establish a glow discharge. The gas-filled chamber can be integral with the laser or can be separate from the laser. In either case, the laser beam passes between the electrodes without impinging upon the electrodes. The laser beam passes through the monitor with no energy loss and, in some cases, with energy gain. The current flowing in the gas discharge of the monitor is a function of the laser energy and this current, or the voltage resulting from this current, may be measured by a suitable measuring device, such as a calibrated meter or cathode ray oscilloscope.

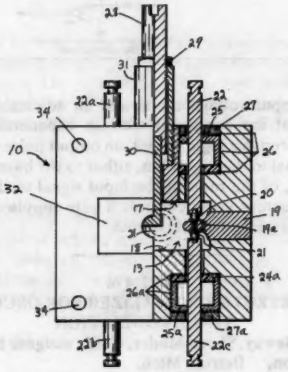
The aforesaid voltage may be used as a control voltage and fed back to control means associated with the laser to adjust the energy output.

The invention described herein may be manufactured, used, and licensed by or for the Government for governmental purposes without the payment to us of any royalty thereon.

3,691,479
MULTI-DIODE SINGLE CAVITY MICROWAVE OSCILLATORS

Bruce G. Malcolm, 38 Arundel Place, Clayton, Mo.

Filed Aug. 24, 1970, Ser. No. 65,910
Int. Cl. H03b 7/06
U.S. Cl. 331—107 G 7 Claims



The disclosure herein relates to single-cavity microwave oscillators in general, and multi-diode single cavity microwave oscillators in particular. The disclosure further relates to methods for combining the microwave power of a plurality of bulk negative resistance diodes in a single resonant cavity, for electronically and mechanically tuning oscillator circuits, for frequency-temperature compensation of the oscillator, and for obtaining low frequency modulated noise from the oscillator.

3,691,480
Patent Not Issued For This Number

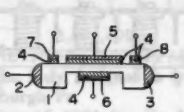
3,691,481
NEGATIVE RESISTANCE ELEMENT

Shoei Kataoka, 2071, Tanashi-shi; Hiroshi Tateno, 1212 Tanashi-shi, both of Tokyo-to; Hiroyuki Fujisada, 444-1-504, 6-chome, Fujimi-cho, Tachikawa-shi, Tokyo-to; Mitsuo Kawashima, 49, Jiyugaoka,, Meguro-ku, Tokyo-to; Yasuo Komamiya, 13, 1-chome, Midori-cho, Tokorozawa-shi, Saitama-ken, and Hideo Yamada, 7, Kikuna-machine, Kohoku-ku, Yokohama, all of Japan

Continuation-in-part of Ser. No. 776,292, Aug. 20, 1968, abandoned. This application July 29, 1971, Ser. No. 167,410
Claims priority, application Japan, Aug. 22, 1967, 42/53488; Nov. 27, 1967, 42/75628; Nov. 27, 1967, 42/75629; Nov. 27, 1967, 42/75630; Nov. 27, 1967, 42/75631
Int. Cl. H03b 7/14
U.S. Cl. 331—107 G 31 Claims

Occurrence of high field domain in the conventional Gunn diode is prevented by covering a solid body such as a semicon-

ductor element partially or wholly by a dielectric member or by a control element such as a metallic layer coupled reactively with the solid body through a dielectric member, whereby a solid state element having a negative differential conductivity



is obtained. Such a type of negative-resistance solid state element, together with its various modes of embodimental construction disclosed herein, affords a superior solid state element which is applicable to amplifiers, oscillators, logic memories, and the like of millimeter or submillimeter bands.

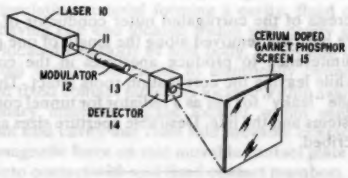
ERRATUM

For Class 331—176 see:
Patent No. 3,690,546

3,691,482
DISPLAY SYSTEM

Douglas Arthur Pinnow, Berkeley Heights, and Le Grand Gerard Van Uitert, Morris Township, Morris County, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Jan. 19, 1970, Ser. No. 3,636
Int. Cl. H01s *3/10*
U.S. Cl. 332—7.51 **9 Claims**

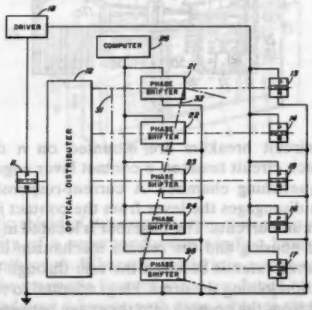


A single color display is produced by projection using a scanning laser beam operating in the visible or ultraviolet and a photoluminescent screen which emits in the visible. Combinations of phosphors may be employed to simulate white or desired colors.

3,691,483
PHASED ARRAY LASER SOURCE

Aaron David Klein, 261 Congressional Lane, Rockville, Md.

Filed Feb. 9, 1970, Ser. No. 14,823
Int. Cl. H01s *3/02*; H04b *9/00*
U.S. Cl. 332—7.51 **5 Claims**

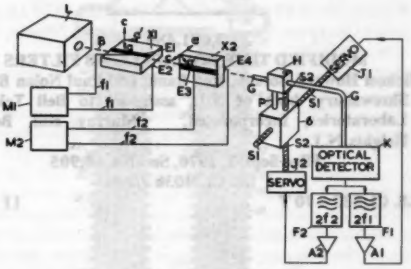


This invention is directed to an electronically scanned laser array. It utilizes a phase-locking laser, an array of variable phase shifters, an array of semiconductor lasers and a control computer. The output of the phase-locking laser is optically coupled, by means of reflective or transmission optics, to the phase shifters which are controlled in a predetermined pattern by the computer. The phase shifters are optically coupled to the array and cause uniform shifts in the phase front of the arrayed lasers to provide a scanning effect of the output beam.

3,691,484
ELECTRO-OPTICAL MODULATORS

Marcus John Dore, Bournemouth, England, assignor to National Research Development Corporation, London, England

Filed Aug. 13, 1969, Ser. No. 849,643
Int. Cl. H01s *3/10*
U.S. Cl. 332—7.51 **1 Claim**



An electro-optical modulator comprising an electro-optic crystal, means for projecting a beam of light through the crystal on to an optical aperture, and means for applying to the crystal a variable electric field which will be substantially non-uniform across the beam of light in any plane transverse to the path of the beam so as to cause a variable spreading of the beam and thereby modulate the amount of illumination passing through the optical aperture. The electric field may be applied to the crystal by means of two narrow linear electrodes on opposite sides of the crystal and parallel to the path of the beam. The optical aperture may be a translucent aperture in an opaque screen, or it may be one end of a fiber-optic light guide.

An optical alignment system may be formed of one or two such electro-optic modulator crystals, an optical detector for producing an electrical signal representing the amount of illumination passing through the optical aperture and frequency selective means responsive to the said signal. Servo systems may be provided for adjusting the position of the aperture transversely so as to maximize the output of the frequency selective means.

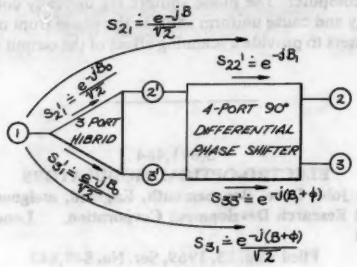
3,691,485
THREE-PORT QUADRATURE HYBRIDS

Alfred B. Beck, Torrance, Calif., assignor to TRW, Inc., Los Angeles, Calif.

Filed Aug. 3, 1970, Ser. No. 60,325
Int. Cl. H01p *5/12, 3/08, 9/00*
U.S. Cl. 333—11 **4 Claims**

Three-port impedance-transforming microwave circuit characterized by an extremely low input VSWR, and having a

four-port 90° differential phase shifter coupled to the paired ports of a three-port hybrid. Broadbanding can be accomplished through the use of phase-shifting transmission line sections in the hybrid and the phase shifter.



3,691,486

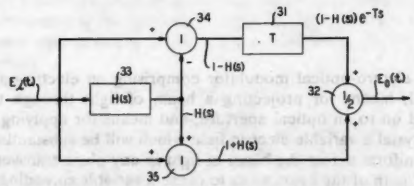
MODIFIED TIME DOMAIN COMB FILTERS

Michael Howard Borsuk, Red Bank, and Paul Nolan Browne, Shrewsbury, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Sept. 2, 1970, Ser. No. 68,905

Int. Cl. H03h 7/28

U.S. Cl. 333—70 T **11 Claims**



A delay line type comb filter is adapted to produce a response in which a selected portion of the comb characteristic is modified. This is accomplished by attenuating the signal through the delay line in a predetermined manner over a selected frequency range and inversely modifying the non-delayed transmission in that range. These two functions are provided by applying the input signal to a filter element having a transfer function appropriate to the desired modification and combining the filtered output with the input signal in two combiners (one additive and one subtractive). The differential resultant signal is applied to the delay line to produce the prescribed attenuation and the additive resultant signal (enhanced inversely to the differential resultant) is added to the output of the delay line producing the desired modified comb transmission characteristic.

3,691,487

HELICAL RESONATOR TYPE FILTER

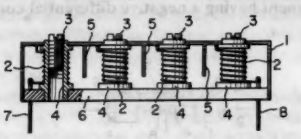
Keizo Yoshimoto, Tokyo-to, Japan, assignor to Toko Kabushiki Kaisha, Tokyo-to, Japan

Filed April 24, 1970, Ser. No. 31,622

Int. Cl. H03h 7/10; H01p 7/06

U.S. Cl. 333—73 R **1 Claim**

A helical coil resonator type filter employable in the television broadcasting frequency range can be obtained by an improved construction of the resonator filter wherein a frequency adjusting core inside of each of a plurality of helical coils, enclosed in a metal casing, is made of a ferromagnetic ferrite so that the operable frequency range of the filter can be varied by adjusting the position of the cores in the helical coils.



3,691,488

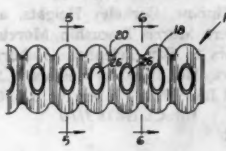
RADIATING COAXIAL CABLE AND METHOD OF MANUFACTURE THEREOF

Alfred G. Holtum, Jr., Oak Forest, Ill., assignor to Andrew Corporation, Orland Park, Ill.

Filed Sept. 14, 1970, Ser. No. 71,804

Int. Cl. H01p 1/00, 11/00; H01q 13/22

U.S. Cl. 333—84 R **12 Claims**



The crests of the corrugated outer conductor of a coaxial cable are partially removed along the length of one portion of its circumference to produce apertures in the corrugation crests while leaving the corrugation roots intact. The cable is thus made "leaky" for use as a radiator for tunnel communications systems and the like. Desirable aperture sizes and shapes are described.

3,691,489

ELECTRICAL DISTRIBUTING APPARATUS PROTECTIVE DEVICES THEREFOR

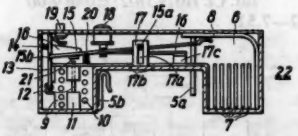
Gunther Knirsch, Bretten, and Herrmann Schmitt, Heidelberg, both of Germany, assignors to Brown, Boveri & Cie Aktiengesellschaft, Pastfach, Mannheim, Germany

Filed Sept. 20, 1971, Ser. No. 181,728

Claims priority, application Germany, Sept. 26, 1970, P 20 47 521.2

Int. Cl. H01h 9/30

U.S. Cl. 335—201 **22 Claims**



Plug-in circuit breakers are mounted on a distribution panel. In each circuit breaker, a contact lever engages a contact in a quenching chamber. A current-responsive release mechanism disengages the lever from the contact in response to short-circuit currents. The chamber is located in one arm of a U-shaped housing and the release mechanism in the other arm. The lever extends between the arm through the narrow central portion joining the arms. Plugs adapted to receive current extend from the housing into the space between the arms. The plugs engage jacks in the distribution panel while the U-

shaped housing fits around the jacks. The release mechanism includes a spring that pushes the lever against the contact while the non-contacting end of the lever is held by a catch. A release magnet or a bimetallic member, responding to the excess current displaces the catch and releases the lever.

3,691,490

MAGNETIC SWITCH APPARATUS

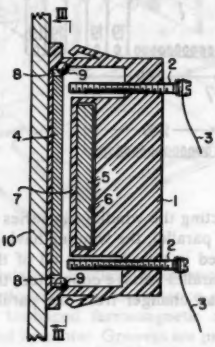
Luigi Ragni, Brescia, Italy, assignor to Oxford Electric Corporation, Pittsburgh, Pa.

Filed June 15, 1971, Ser. No. 153,369

Claims priority, application Italy, Nov. 9, 1970, 5235-A/70

Int. Cl. H01h *36/00*

U.S. Cl. 335—205 **7 Claims**



A magnetic electric switch comprising a sealed body of electrical insulating material forming a cavity, fixed contact members having one end located within said cavity and the other end located exteriorly of said body, a movable contact plate located within said cavity to electrically connect the ends of said fixed contact members located within said cavity and stationary magnetic means located within said body spaced from said cavity and from said movable contact plate to exert a magnetic force on said movable contact plate to pull said plate into contact with said fixed contact members.

3,691,491

SUPERCONDUCTIVE SWITCHING PATH FOR HEAVY CURRENT

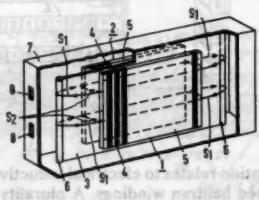
Ernst Massar, Mozartstr. 36, and Hans Voigt, Furstenweg 19, both of Erlangen, Germany

Filed Dec. 4, 1970, Ser. No. 95,088

Claims priority, application Germany, Dec. 13, 1969, P 19 62 704.4

Int. Cl. H01f *7/22*

U.S. Cl. 335—216 **20 Claims**



A magnetic shield of superconducting material is positioned in the vicinity of a superconductive winding having current flowing therethrough. When the shield is in a superconductive condition, the magnetic lines of force produced by the winding are forced into a longer path than without the shield, so that the magnetic field within the winding is smaller than the lowest critical field intensity at any point of the winding. When the current in the winding reaches a predetermined intensity, the shield loses its shielding effect at least partially, due to the increased magnetic field, so that the magnetic lines of force are shortened and the magnetic field increases within the winding to a magnitude above the highest critical magnetic field intensity at any point of the winding passed by the predetermined current.

3,691,492

CHOKE

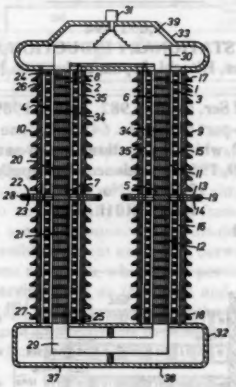
Walter Muller, Schwabach, Germany, assignor to Transformatoren Union Aktiengesellschaft, Stuttgart-Bad Cannstatt, Germany

Filed Dec. 10, 1971, Ser. No. 206,828

Claims priority, application Germany, Dec. 10, 1970, P 20 60 682.0; Dec. 10, 1970, HGM 70 45 527.5

Int. Cl. H01f *27/10, 15/04*

U.S. Cl. 336—60 **20 Claims**



A choke for high voltage mains. The choke includes two identical partial windings having turns wound in opposite directions to one another. The magnetic circuit includes a ferromagnetic upper yoke and a ferromagnetic lower yoke. The upper ends of the partial windings are electrically connected to the upper yoke to which is applied the full potential to be applied to the choke and the lower ends of the partial windings are electrically connected to the lower yoke. The magnetic circuit includes two magnetic core members extending between the upper yoke and the lower yoke. The partial windings are each disposed respectively about individual ones of the magnetic core members. Two insulating columns each having an upper opening and a lower opening surround respectively individual ones of the partial windings. Two shielding members are positioned respectively about individual ones of the yoke members. The shielding members and the yoke members are effective to close off the upper and lower openings of the insulating columns from space outside of the choke.

3,691,493

COIL PLATE ASSEMBLY

Gerd C. Boysen, Milwaukee, and Raymond H. Hannula, West Allis, both of Wis., assignors to Allen-Bradley Company, Milwaukee, Wis.

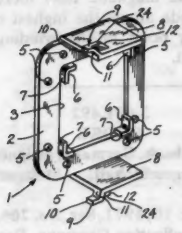
Filed Sept. 30, 1971, Ser. No. 185,102

Int. Cl. H01f *15/02, 27/30*

U.S. Cl. 336—65 **9 Claims**

A coil plate assembly having a pair of coil plates with an electrical coil interposed therebetween to position the coil in a molding die for encapsulation in an insulating material. The coil plates each have a pair of side shrouds extending along-

side the coil and a boss is formed on the remote end of each shroud. A terminal clasp encircles each pair of bosses of adjacent shrouds to connect the shrouds of the two plates



together. In addition, the terminal clasps are electrically connected to the coil and extend outward from the coil plates to act as terminals for making connection in a circuit.

3,691,494

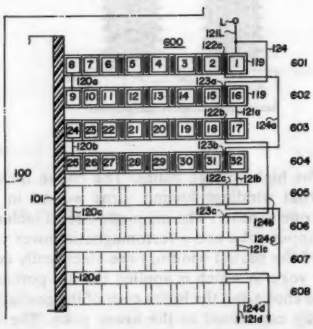
WINDING OF STATIONARY INDUCTION APPARATUS

Kenichi Okuyama, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 829,982, June 3, 1969, abandoned, Continuation-in-part of Ser. No. 645,980, June 14, 1967, Pat. No. 3,560,902, which is a continuation-in-part of Ser. No. 326,845, Nov. 29, 1963, abandoned. This application Nov. 30, 1970, Ser. No. 93,872

Int. Cl. H01f 15/14

U.S. Cl. 336—70 **6 Claims**



A disk winding of a stationary induction apparatus such as a power transformer or reactor in which, in order to improve the initial potential distribution due to intrusion of impulse voltage so as to distribute the potential substantially linearly over the entire length of the winding, the outer end of a shielding conductor incorporated in each coil section is connected solely with the outer end of a shielding conductor in the coil section which is spaced even-numbered layers of at least four layers from the first-mentioned coil section including the said coil section.

3,691,495

NON-SHORTING WINDING CONNECTION FOR TAP CHANGER ON SERIES-MULTIPLE TRANSFORMER

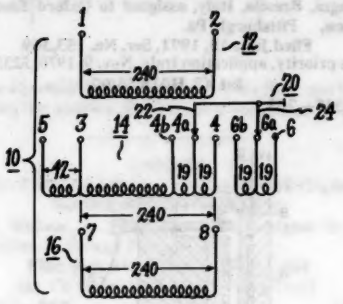
Gerard V. Conway, Pittsfield, Mass., assignor to General Electric Company

Filed Dec. 10, 1971, Ser. No. 206,726

Int. Cl. H01f 21/12

U.S. Cl. 336—147 **4 Claims**

A tap changer winding connection for a series-multiple transformer. One of the windings is provided with a plurality of continuous turns equal to the multiple or parallel voltage of the transformer. The winding is also provided with a plurality of tap connections. A second winding portion, discontinuous from the first winding is also provided having a plurality of tap connections. One or more other windings are provided also having sufficient continuous turns equal to the multiple or parallel voltage of the transformer. A series-multiple switch is



provided for connecting the windings in series or in parallel. When connected in parallel, the winding having the tap connections is connected in parallel with all of the continuous turns equal to the parallel voltage connected, thus effectively disconnecting the tap changer from the parallel connected windings.

3,691,496

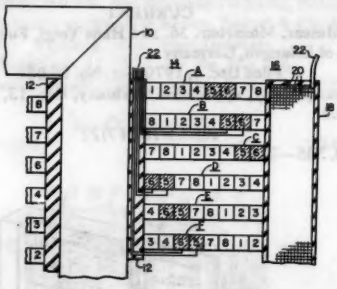
HELITRAN WINDING FOR ELECTRICAL INDUCTIVE APPARATUS

Nicholas G. Beavo, Sharon, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed April 20, 1971, Ser. No. 135,712

Int. Cl. H01f 21/12

U.S. Cl. 336—150 **9 Claims**

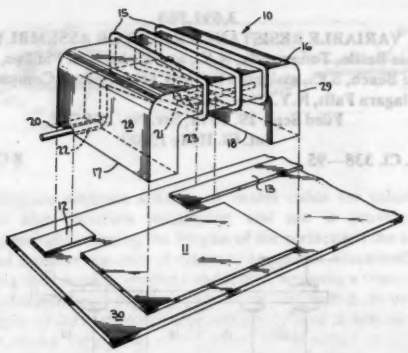


This invention relates to electrical inductive apparatus comprising tapped helitran windings. A plurality of separate conductors are simultaneously wound to form the helitran winding. One group of conductors provides a path for the load current of the winding. Another group of conductors has tap leads attached to the conductors. This group is used as a tapped winding for connection to tap changing apparatus. By winding the load and tapped windings simultaneously, the electrical and mechanical properties of tapped helitran windings may be economically improved.

3,691,497
LEADLESS MICROMINIATURE INDUCTANCE ELEMENT WITH A CLOSED MAGNETIC CIRCUIT

John P. Bailey, Atlanta, Ga., and William L. Muckelroy, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Army

Filed Oct. 15, 1970, Ser. No. 80,851
Int. Cl. H01f 15/10, 27/26
U.S. Cl. 336—192 18 Claims

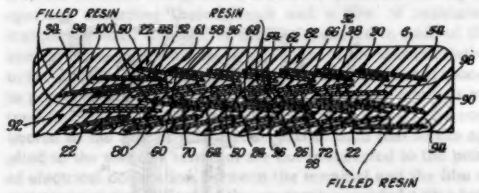


A Microminiature leadless inductance element having a closed magnetic loop. The inductance element comprises a conventional U-shaped ferromagnetic core having a wire winding around its center. Grooves are provided at the underside of the feet of the U-shaped core so as to receive the terminal portions of the wire winding. The grooves are coated with an electrical conductor and a similar electrically conductive coating is provided on the substrate such that an electrical connection is made without the use of soldering wires. A closed magnetic loop is achieved by applying a ferromagnetic coating along a portion of the substrate surface such that when the U-shaped core is placed on the substrate, all the flux lines generated within the core are conducted through the ferromagnetic coating on the substrate. This eliminates stray flux lines and materially enhances the Q of the system.

3,691,498
RESIN IMPREGNATED TRANSFORMER COIL ASSEMBLY

Martin I. Zwelling, Zanesville, and Robert W. Russell, New Concord, both of Ohio, assignors to McGraw-Edison Company, Elgin, Ill.

Filed March 24, 1971, Ser. No. 127,725
Int. Cl. H01f 27/32
U.S. Cl. 336—205 4 Claims

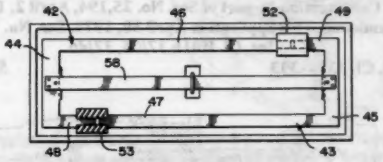


A transformer coil assembly having a strip conductor wound to form a plurality of helix-shaped winding layers positioned concentrically and impregnated and encapsulated with a solidified unitary resinous mass. The strip conductor has a strip of conductive material and a strip of insulative material engaging one of the faces of the conductive strip and extending beyond both edges of the conductive strip which separates and electrically insulates adjacent turns in a layer and adjacent layers from each other. The resinous mass includes a filler which is unevenly distributed within the resin such that pure resin is in the smaller interstices of the coil, between turns in a layer and between turns of adjacent layers and a resin and filler in the larger interstices of the coil and encapsulating the coil.

3,691,499
ACTUATING DEVICE EMPLOYING A HEAT EXPANSIBLE WIRE

Hugh J. Tyler, Santa Ana, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Sept. 10, 1971, Ser. No. 179,372
Int. Cl. H01h 71/18
U.S. Cl. 337—123 3 Claims

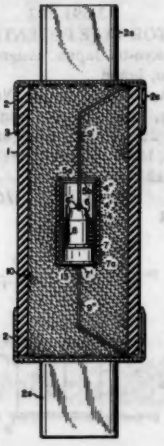


The present actuator employs a heat expansible element and is of the type actuator known as a "hot-wire" actuator. The present actuator has an extremely simplified structure formed by two substantially J-shaped frame members, the arms of which are interconnected by insulating members; a thermally expansible element extending between the base portions of the frame members, which base portions also have depending legs serving both as terminals and supports for the frame; and linkage means responsive to the tension of the element as it expands and contracts to produce movement useful for actuating switches, valves, etc.

3,691,500
ELECTRIC CARTRIDGE FUSE WITH EXTERNAL SOLDER JOINTS

Frederick J. Kozacka, South Hampton, N.H., assignor to The Chase-Shawmut Company, Newburyport, Mass.

Filed April 16, 1971, Ser. No. 134,801
Int. Cl. H01h 85/16
U.S. Cl. 337—232 7 Claims



A cartridge fuse with "exposed" solder joints conductively interconnecting the fusible element means and the terminal

caps on the casing of the fuse (as distinguished from a cartridge fuse having "blind" solder joints serving the same purpose) is provided with a novel kind of "exposed" solder joints. The axially outer ends of the fusible element means are clamped between the outer surface of the casing and the inner lateral surfaces of the terminal caps. The lateral surfaces of the terminal caps have apertures in registry with the ends of the fusible element means. The apertures form cavities for solder joints conductively connecting the ends of the fusible element means and the terminal caps.

3,691,501

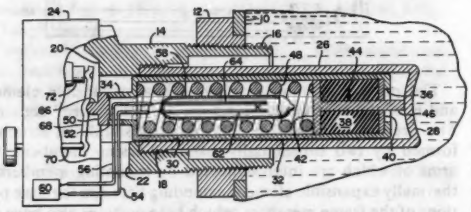
THERMOSTAT ASSEMBLIES UTILIZING A HEAT EXPANSIVE AND CONTRACTIVE ELASTOMERIC MATERIAL

Jay R. Katchka, Long Beach; Michael J. Caparone, Arcadia, and Louis P. Morris, Garden Grove, all of Calif., assignors to Robertshaw Controls Company, Richmond, Va.

Continuation-in-part of Ser. No. 25,194, April 2, 1970, abandoned. This application April 30, 1971, Ser. No. 139,105

Int. Cl. H01h *37/06, 37/46*

U.S. Cl. 337—393 **58 Claims**



A thermostat assembly including a tubular housing, a thermal element including a heat expansive and contractive, elastomeric material, an actuator adapted to operate a control device through an open end of the housing, and a retainer slidably disposed within the housing and engaging the thermal element and the actuator to move the actuator in response to expansion and contraction of the material. Various embodiments of the thermostat assembly utilize a removable retainer capsule enclosing the material and an operator member, a thermal element having a central bore to permit withdrawing of the actuator into the housing with heat increase, and a hollow cylindrical retainer to accommodate a temperature responsive switch.

3,691,502

SEMICONDUCTOR TYPE POTENTIOMETER DEVICE

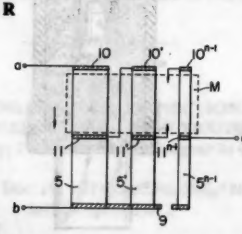
Shoei Kataoka, Tokyo-to, Japan, assignor to Kogyo Gijutsuin (a/k), Tokyo-to, Japan

Filed April 21, 1969, Ser. No. 817,934

Claims priority, application Japan, April 24, 1968, 43/27059; Nov. 20, 1968, 43/84456; Nov. 30, 1968, 43/87324; Feb. 19, 1969, 44/11812; Feb. 20, 1969, 44/12127; Feb. 21, 1969, 44/12591

Int. Cl. H01c *7/16*

U.S. Cl. 338—32 R **27 Claims**



Various improvements of a semiconductor type potentiometer device comprising one or more three electrode semiconductor elements each having two end electrodes and an intermediate electrode provided at its intermediate portion, and a magnetic field applying device for applying a magnetic field to the semiconductor element while being moved along the element; these improvements being made to extend greatly the variable range of the output voltage of the device and to obtain an output voltage corresponding to one-dimensional variation as well as two-dimensional variation of the magnetic field.

3,691,503

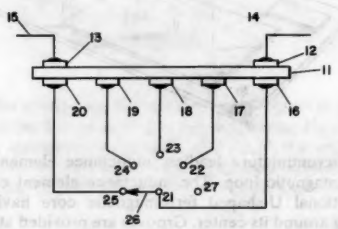
VARIABLE RESISTANCE RESISTOR ASSEMBLY

James Battle, Tonawanda, N.Y., and Richard A. Phillips, Myrtle Beach, S.C., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed Sept. 29, 1971, Ser. No. 184,742

Int. Cl. H01c *13/00*

U.S. Cl. 338—95 **8 Claims**



A variable resistance resistor assembly comprises as its central component a resistance element in sheet form, which can be an ohmic resistor, a thermistor having a positive or negative temperature coefficient of resistivity, a varistor, or the like. One side of the resistance element sheet is provided with a pair of terminal electrodes, between which the resistance of the resistor assembly is varied. On the opposite side of the resistance element sheet there is provided a plurality of resistance variance electrodes, which can be shorted out to vary the resistance of the resistor assembly.

3,691,504

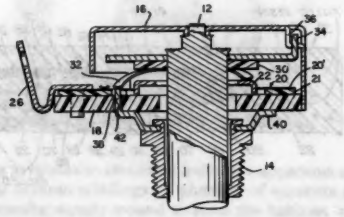
VARIABLE RESISTOR WITH COLLECTOR AND GROUNDING CONTACT

George O. Puerner, Frankford, Ind., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Oct. 27, 1971, Ser. No. 192,908

Int. Cl. H01c *9/02*

U.S. Cl. 338—174 **4 Claims**



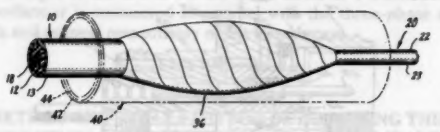
A tab is connected to a mounting plate for a control means, the tab terminating at a predetermined position along a resistive path of the control means to provide selective positioned grounding of the contact arm.

3,691,505

HEATER CABLE SPLICE AND METHOD OF FORMING

Ralph L. Graves, East Greenwich, R.I., assignor to General Electric Company

Continuation-in-part of Ser. No. 733,369, May 31, 1968, abandoned. This application Aug. 20, 1970, Ser. No. 65,532
Int. Cl. H01c 3/00; H02g 15/08
U.S. Cl. 338—214 3 Claims



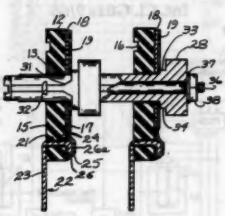
Moisture resistant splicing of heater cable for subsoil or other high moisture installation and use is provided by progressively exposing the lengths of the surfaces of the superposed layers of the ends of cables to be spliced, electrically engaging the current carrying conductors, applying a semi-cured vulcanizable insulation layer about the conductors, to contact sections of the surfaces of exposed layers, heat shrinking a two layer shrink tube as an outer jacket of the splice and simultaneously heating and compressing the semi-cured vulcanizable insulating layer to partially fuse the layer and to bond the layer to the exposed surfaces.

3,691,506

RESISTORS AND STACKED PLURALITY THEREOF

Stanley O. Bender, Berne, and Joseph Di Girolama, Elkhart, both of Ind., assignors to CTS Corporation, Elkhart, Ind.

Filed April 5, 1971, Ser. No. 131,029
Int. Cl. H01c 1/02
U.S. Cl. 338—317 15 Claims



An electrical assembly comprises a plurality of discrete resistors connected together in stacked relationship. Each of the discrete resistors comprises a dielectric substrate having an aperture extending therethrough and a film of resistance material secured thereon. A spacer supported in each of the apertures has means preventing rotation of the spacer relative to the dielectric substrate and interfits with an adjacent spacer to prevent relative rotation of the two spacers. Terminals extend through the dielectric substrate and are electrically connected to the film of resistance material such that forces applied to the end of a terminal are not transferred to the point of electrical connection between the terminal and the film of resistance material. Each of the spacers is provided with a hole extending therethrough such that a bolt passing through the holes maintains the discrete resistors in stacked relationship.

3,691,507

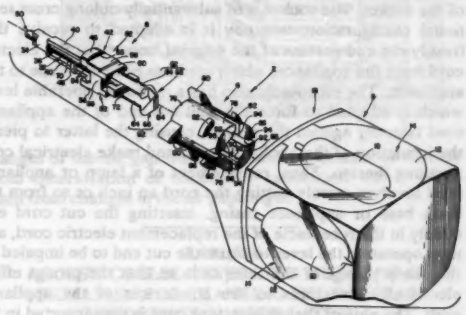
Patent Not Issued For This Number

3,691,508

NOVEL PLUG AND SOCKET ASSEMBLIES FOR FLASH CUBES

John B. Morse, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed June 30, 1970, Ser. No. 51,249
Int. Cl. G03b 9/70; H01r 13/62
U.S. Cl. 339—45 T 28 Claims



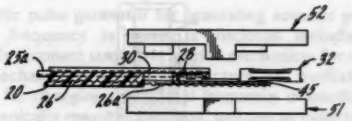
A novel plug and socket assembly is provided for releasably securing flash cubes wherein said novel socket is adapted to selectively reject predetermined plugs while said novel plug is adapted to mate with said novel socket and with all sockets common to the prior art.

3,691,509

SHIELDED FLAT CABLE CONNECTOR ASSEMBLY

Stanley J. Krol, Chicago, Ill., assignor to Malco Manufacturing Company, Inc., Chicago, Ill.

Filed Aug. 17, 1970, Ser. No. 64,527
Int. Cl. H01r 13/58
U.S. Cl. 339—14 R 7 Claims



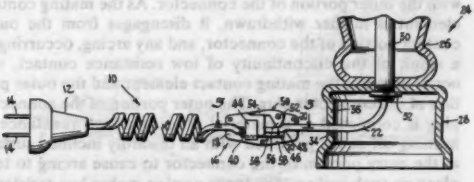
A connector assembly for shielded multi-conductor, flat cable wherein a connector housing is anchored through the cable matrix and shield material. The conductors are shielded, yet insulated from the shielding, in the connector housing as well as along the length of the cable.

3,691,510

QUICK REPLACEMENT, SLACK TAKE-UP ELECTRIC CORD FOR LAMPS, RADIOS, CLOCKS AND THE LIKE

Herbert G. Lehmann, 5 Kent Road, Easton, Conn.

Filed April 15, 1970, Ser. No. 28,762
Int. Cl. H01r 11/00, 11/20
U.S. Cl. 339—28 3 Claims



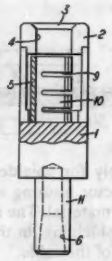
A quick replacement, slack take-up electric cord for small appliances such as lamps, clocks, radios, etc. comprising a

length of two-conductor lamp cord which is preferably coiled and permanently set in a helix, one end of the lamp cord having attached to it a conventional two-prong electric plug adapted to be inserted in a wall receptacle. The other end of the two-conductor cord carries, and extends into one end of a special elongate receptacle having a socket or recess at its other end, opposite the entrance of the two-conductor cord. Within the special receptacle are two metal connector pieces having sharp prongs, the latter being located at the inner end of the socket. The socket is of substantially oblong cross sectional configuration, whereby it is adapted to receive the freshly-cut end portion of the original, somewhat flat electric cord from the appliance, which cord has been cut close to the appliance. The receptacle also has a manually operable lever which is adapted to force the said cut end of the appliance cord laterally against the prongs, causing the latter to pierce the insulation of the appliance cord and make electrical connections thereto. Thus, replacement of a lamp or appliance cord involves merely cutting the cord an inch or so from the lamp base or appliance casing, inserting the cut cord end deeply in the receptacle of the replacement electric cord, and then operating the lever to cause the cut end to be impaled on the sharp prongs of the receptacle so that the prongs effect electrical connections to the conductors of the appliance cord. The plug of the replacement cord is then inserted in the wall receptacle, whereupon the installation is complete.

3,691,511
PLUG CONNECTION CONTACT WITH HIGH SECURITY AGAINST BURNING OFF

Gerhard Leonhard Emil Billmann, Bad Rappenau, Germany, assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed Oct. 5, 1970, Ser. No. 77,903
Int. Cl. H01r 13/52
U.S. Cl. 339—111 **6 Claims**

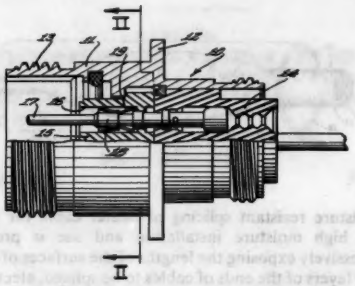


An electric connector for high circuit loads having an inner contact portion and an outer contact portion for the purposes of minimizing the arc encountered in switching high circuit loads. In an assembled position, a mating contact is electrically engaged by both the inner and the outer contact portions of the connector. When being removed from the connector, the mating contact disengages from the inner contact portion of the connector first, while maintaining electrical contact with the outer portion of the connector. As the mating contact element is further withdrawn, it disengages from the outer contact portion of the connector, and any arcing, occurring as a result of the discontinuity of low resistance contact, will occur between the mating contact element and the outer portion of the connector plug. The outer portion of the connector plug is composed of a material offering a high resistance to burning-off and is provided with an inwardly inclined surface at the entry portion of the connector to cause arcing to take place on such incline. The inner portion makes low resistance connection with the mating connector, and, by the action of the outer connector portion, is protected against the effects of arcing.

3,691,512
IMPREGNATED CERAMIC INSULATORS AND METHOD OF MAKING SAME

William E. Exner, Elmhurst, Ill., assignor to The Pyle-National Company, Chicago, Ill.

Filed Sept. 16, 1970, Ser. No. 72,595
Int. Cl. H01r 23/02, 13/46
U.S. Cl. 339—176 M **7 Claims**

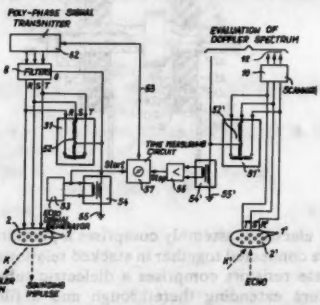


Moisture resistant electrical insulators particularly for use in electrical connectors including a matrix of a normally porous ceramic material which is impregnated with a thermoset electrically insulating resinous composition.

3,691,513
VELOCITY MEASURING SYSTEM

Wolfgang Richard Ernst Stedtnitz, Neukrug, Germany, assignor to Fried Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Continuation-in-part of Ser. No. 850,146, Aug. 14, 1969, Pat. No. 3,603,920. This application March 3, 1971, Ser. No. 120,608
Claims priority, application Germany, Sept. 19, 1968, P 17 98 276.2; Mar. 5, 1970, P 20 10 348.4
Int. Cl. G01s 9/66
U.S. Cl. 340—3 D **6 Claims**



Apparatus for determining the velocity and direction of movement of a vehicle by measuring the Doppler effect, which apparatus includes an array of individual transducer elements mounted on the bottom of the vehicle for sending and receiving sound signals. Multi-phase signal generating means are provided to generate a plurality of signals of substantially similar frequency to produce sound waves from the transducer elements, with the signals each having a different phase. The transducer elements of an array are equidistantly spaced from one another and electrically connected into groups, the number of groups being a multiple of the number of phase signals produced by the multi-phase generator. The transducer elements of each group are arranged in a line, and the lines formed by each group are parallel to the lines formed by other groups and occupy a common plane. A signal of a single phase is applied to each group in cyclical repetition to produce a directive signal from the entire array of transducer

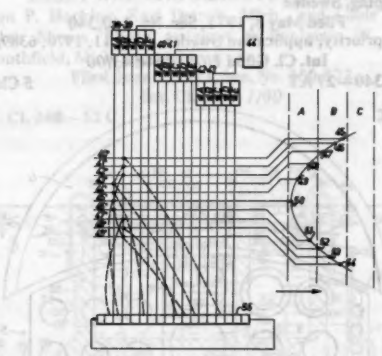
elements. A frequency evaluating circuit is provided to evaluate the frequency of signals produced by sound waves striking the transducer elements and a scanner means is provided to successively connect each group of transducer elements to the frequency evaluating circuit in a cycle having substantially the same period as the cyclical repetition of the sound radiating signal. In order to prevent interferences from undesired lobes of the transmitted and received signals the spacing between adjacent transverse rows of similar phased transducers in each row, in a three-phase system is less than $\lambda/3$, where λ is the wavelength of the sound waves, and a Scott or T-connection transformer is connected in parallel with the three-phase inputs and outputs respectively of the transducers.

3,691,514

METHOD AND APPARATUS FOR DETERMINING THE DIRECTION OF PROPAGATION OF A PLANE WAVE

Anne-Marie Jeanne Goursolas, Paris, and Andre Simon Georges Lambert, Fresnes, both of France, assignors to Societe Alsacienne De Constructions Atomique De Telecommunications Et D'Electronique "Alcatel", Paris, France

Filed June 16, 1970, Ser. No. 46,667
Claims priority, application France, June 16, 1969, 6920024
Int. Cl. G01s *3/00*
U.S. Cl. 340—6 R 8 Claims



A method and apparatus for determining the direction of propagation of a plane wave, wherein the analog signals occuring at preselected time intervals from a plurality of detectors spaced along a predetermined direction are converted to digital signals. The difference between the aggregated value of the digital signals of the detected wave and a wave in the predetermined direction providing an indication of the deviation of the path of the wave from the predetermined direction.

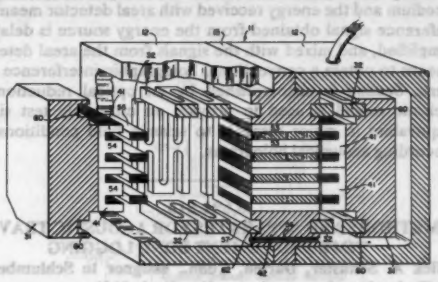
3,691,515

VARIABLE RELUCTANCE MAGNETIC FIELD TRANSDUCER

George Pida, Arlington, Va., assignor to The United States of America as represented by the Secretary of the Navy

Filed Sept. 29, 1960, Ser. No. 59,453
Int. Cl. G01v *1/00*
U.S. Cl. 340—8 R 6 Claims

A magnetic field transducer of the variable reluctance type provided with permanent magnetic biasing having a high degree of electromechanical coupling. The arrangement of the mechanical system is such as to isolate the dynamic



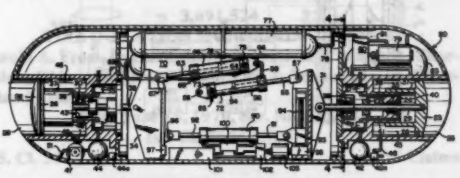
changes of the air gap from hydrostatic pressures to thereby avoid deterioration of transducer calibration which would result from changes in the air gap length.

3,691,516

ACOUSTIC PULSE GENERATOR UTILIZING A MECHANISM FOR CHANGING THE NATURAL FREQUENCY OF OSCILLATION

Walton Graham, Roslyn; Irving E. Melnick, Syosset, and Tullio De Filippis, Garden City, all of N.Y., assignors to Control Data Corporation, Minneapolis, Minn.

Filed Nov. 21, 1969, Ser. No. 878,776
Int. Cl. G01v *1/02*
U.S. Cl. 340—8 R 29 Claims



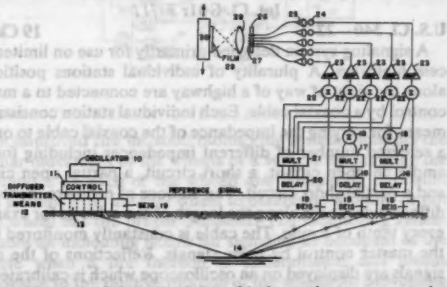
An acoustic pulse generator for generating acoustic pulses of varying frequency in water is disclosed including a mechanically resonant structure, a drive mechanism for causing the mechanically resonant structure to oscillate, a mechanism for changing the natural frequency of oscillation of the mechanically resonant structure, and one or more transducers for transmitting the oscillations of the mechanically resonant structure to the water in which the acoustic pulse is to be generated.

3,691,517

SEISMIC HOLOGRAPHY

Emmet D. Riggs, Dallas, Tex., assignor to Atlantic Richfield Company, New York, N.Y.

Filed July 25, 1969, Ser. No. 844,864
Int. Cl. G01v *1/00*
U.S. Cl. 340—15.5 CP 3 Claims



By utilization of the principles of holography, a remote object, usually a seismic anomaly, is made visible and subject to

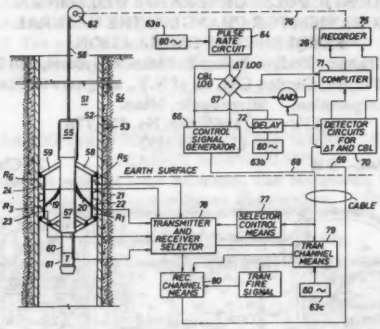
detail examination by visual or optical means. Coherent acoustical energy is transmitted into the earth or other elastic medium and the energy received with areal detector means. A reference signal obtained from the energy source is delayed, amplified, and mixed with the signals from the areal detector means to obtain a conventional holographic interference pattern. Scaling is accomplished by an optical reduction. A seismic model is used to provide an ultrasonic test signal equivalent in major respects to seismic field conditions for recording acoustical holograms.

3,691,518

METHODS AND APPARATUS FOR ACOUSTIC TRAVEL TIME AND CEMENT BOND LOGGING

Nick A. Schuster, Darien, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed April 7, 1970, Ser. No. 26,265
Int. Cl. G01v *1/16*
U.S. Cl. 340—.18 P **17 Claims**



An illustrative embodiment of the present invention includes an acoustic well logging sonde having four articulated arm members disposed at quadrant intervals about a central tubular body member and having an acoustic transmitting transducer disposed on the lower portion of the body member. A total of six acoustic transducers are carried by the four quadrant spaced arms of the tool. A switching arrangement is provided for selecting groups of four of the six articulated transducers for making either cement bond log measurements or acoustic travel time measurements.

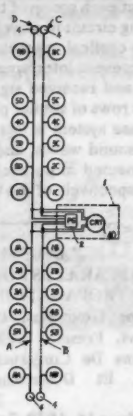
3,691,519

PULSE REFLECTING HIGHWAY SIGNALLING SYSTEM

David Wolf, 67 Brackett Road, Newton, Mass.

Continuation-in-part of Ser. No. 29,122, April 16, 1970, abandoned. This application Aug. 10, 1970, Ser. No. 62,417
Int. Cl. G01r *31/11*
U.S. Cl. 340—22 **19 Claims**

A signaling system designed primarily for use on limited access highways. A plurality of individual stations positioned along the right of way of a highway are connected to a master control by a coaxial cable. Each individual station consists of a means for varying the impedance of the coaxial cable to one of a selected number of different impedances including for example an open circuit, a short circuit, a partial open circuit and a partial short circuit. The stations of each are located at different distances along the length of the cable as for example every tenth of a mile. The cable is constantly monitored from the master control by pulse signals. Reflections of the pulse signals are displayed on an oscilloscope which is calibrated for an A scope visual display and indication of the particular station from which a pulse signal is reflected or partially reflected by an impedance mismatch. In a modification, in place of a coaxial cable with individual stations there is provided a parallel pair of normally spaced wires supported by a dielectric



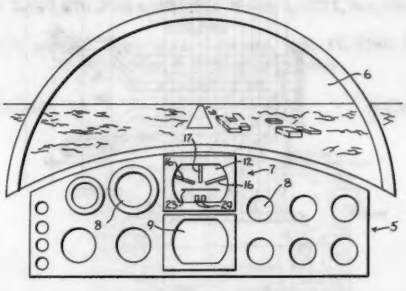
whereby the conductive wires may be moved toward one another to change the characteristic impedance at a given location.

3,691,520

MANEUVERING COMMAND DISPLAY FOR AIRCRAFT

Knut Lennart Nordstrom, Saab-Scania Aktiebolag S-581-88, Linkoping, Sweden

Filed May 5, 1971, Ser. No. 140,340
Claims priority, application Sweden, May 11, 1970, 6389/70
Int. Cl. G05d *1/08*; B64d *43/00*
U.S. Cl. 340—27 AT **5 Claims**



Maneuvering commands are displayed to an aircraft pilot by three conspicuous bars on a background panel that has horizontal and vertical axes of symmetry. The bars swing about their ends nearest the intersection of said axes. Two bars, extending symmetrically to opposite sides of the vertical axis signify pitch maneuvers, being aligned with the horizontal axis when pitch is satisfactory or inclined to it in the direction of required pitch change. The third bar is aligned with the vertical axis when heading is satisfactory or inclined to it in the direction of required heading change.

3,691,521

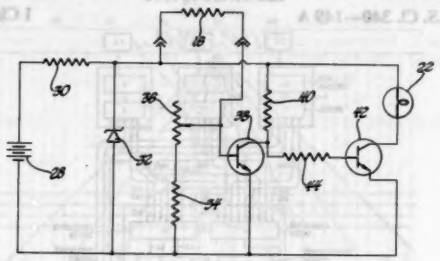
LOW PRESSURE INDICATOR FOR AIR BAG SAFETY SYSTEM

Michael D. Schaefer, Sterling Heights, Mich., assignor to Allied Chemical Corporation, New York, N.Y.

Filed May 3, 1971, Ser. No. 139,492
Int. Cl. B60r *21/00*
U.S. Cl. 340—52 R **9 Claims**

An indicator light is energized when the pressure in a nitrogen storage tank forming part of an air bag safety system falls below a predetermined level. A carbon resistor disposed

within the tank is connected in a voltage divider circuit feeding the input of a first transistor switching circuit. When normal high pressure is maintained in the tank the resistor has a relatively low resistance value so as to maintain a first transistor in a conductive state. A second transistor switching circuit is thereby maintained in a non-conductive state, effectively opening the indicator light circuit. When the pressure in the tank falls below a predetermined threshold the resistance increases to a point where the first transistor circuit becomes non-conductive forcing the second transistor in a conductive state so that the lamp is energized signalling the driver of this failure condition.

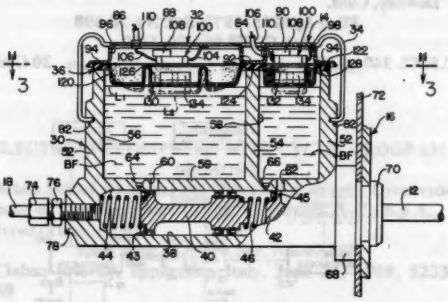


3,691,522

EARLY WARNING BRAKE FAULT SYSTEM

Loren P. Hocking, East Detroit, Mich., and Louis B. Lotti, Clair Shores, Mich., assignors to Benjamin W. Colman, Southfield, Mich., part interest

Filed June 7, 1971, Ser. No. 150,522
Int. Cl. B60q *1/00*
U.S. Cl. 340—52 C 24 Claims



An early warning system, in a motor vehicle having a hydraulic brake system, to signal potential brake failure due either to a loss or leakage of brake fluid from the brake system, or to excessive wear of lining on the brake shoes or disc pads at the wheels is disclosed. The loss of measured as a volume loss of brake fluid.

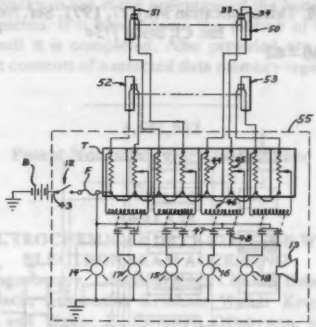
3,691,523

VEHICLE WHEEL TEMPERATURE MONITORING SYSTEM

Millard O. Helms, R.F.D. 2, and Orls G. Dunbar, 817 Reservoir, both of Hannibal, Mo.

Filed June 3, 1971, Ser. No. 149,728
Int. Cl. G08b *21/00*; B60q *1/00*
U.S. Cl. 340—57 6 Claims

A temperature-compensated system for monitoring excessive heat build-up at any wheel of a vehicle includes first and second temperature sensitive elements mounted on either side of each wheel backing plate. The pairs of sensors are connected in circuit with each other and with the vehicle's battery to generate an alarm in the vehicle cab when excessive heat is sensed at any wheel, irrespective of the cause of the excessive heat. A light indicates in which wheel the trouble occurred.

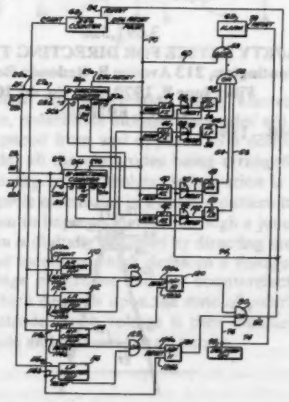


3,691,524

TIRE INFLATION MONITORING SYSTEM

Harold A. Frost, Durham, N.C., and Melvin R. Simpson, Chardon, Ohio, assignors to Eaton Yale & Towne, Inc., Cleveland, Ohio

Filed June 15, 1970, Ser. No. 45,954
Int. Cl. B60c *23/00*
U.S. Cl. 340—58 17 Claims

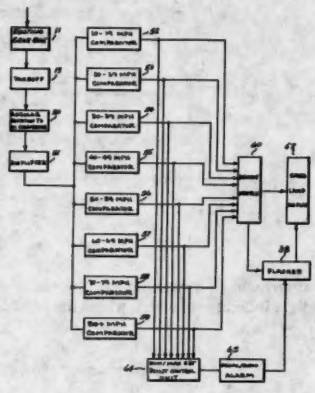


An improved tire inflation monitoring system monitors the angular movement of the wheels of a vehicle by counting the revolutions on each of the wheels and comparing the count with a count from another wheel to determine whether or not each wheel has the proper diameter. The monitoring system includes an indicating means for signaling an occupant of the vehicle when a tire thereon is underinflated and means responsive to the relative rotation of the wheels for preventing false indications of tire underinflation due to slipping of the wheels of the vehicle or to turning of the vehicle.

3,691,525
VEHICLE SPEED INDICATOR SYSTEM

Rudolph M. McClellan, Sr., and Rudolph M. McClellan, Jr., both of 1622 Crestdale, Houston, Tex.

Division of Ser. No. 786,291, Dec. 23, 1968, Pat. No. 3,597,730. This application May 27, 1971, Ser. No. 147,526
Int. Cl. B60q 1/54
U.S. Cl. 340—62 9 Claims

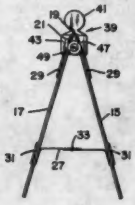


A vehicle speed indicating system comprises indicating lamps mounted on the vehicle and operated in a predetermined pattern to indicate the speed of the vehicle to those remote therefrom.

3,691,526
SAFETY DEVICE FOR DIRECTING TRAFFIC

Jack F. Huntington, 213 Avenue B, Redondo Beach, Calif.

Filed June 8, 1970, Ser. No. 44,209
Int. Cl. E01f 9/01
U.S. Cl. 340—119 6 Claims

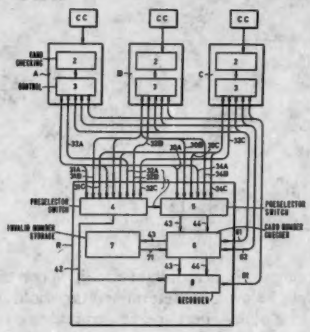


A traffic barricade-type structure constructed entirely of polymeric material such as high impact styrene and vinyl and including a pair of spaced A-shaped elongated strip supports with a pair of generally horizontal spaced elongated strips disposed on each side of the A-shaped supports. These supports are hinged at the apex thereof by resilient straps and the spacing between the legs of the supports is limited by transversely disposed resilient straps which may be temporarily uncoupled to allow the supports to be reversed to expose different safety indicia.

3,691,527
CREDIT CARD ACTUATED VENDING MACHINE SYSTEM

Mititaka Yamamoto, Kyoto, Japan, assignor to Tateisi Electronics Co., Kyoto-shi, Japan

Continuation of Ser. No. 563,158, July 6, 1966, abandoned. This application April 6, 1970, Ser. No. 26,095
Int. Cl. H04q 9/00
U.S. Cl. 340—149 A 1 Claim

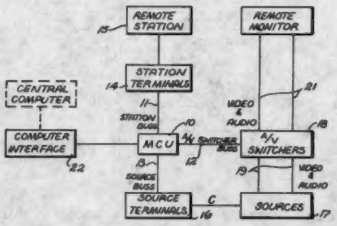


Apparatus for checking whether a credit card inserted into a vending machine is valid and, additionally, assigning priority of operation of the vending machine to owners of credit cards, based on the order of insertion of the credit cards into the machine.

3,691,528
CONTROL SYSTEM FOR AUDIO-VISUAL DEVICES CONNECTED BY CABLES

James F. Calvagna, Anaheim, and Roger A. Balling, Santa Ana, both of Calif., assignors to Community Bank, Downey, Calif.

Filed April 15, 1970, Ser. No. 28,698
Int. Cl. H04q 3/00, 5/00
U.S. Cl. 340—152 R 20 Claims

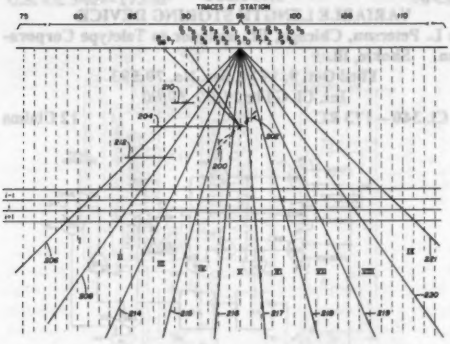


A system for controlling any of a plurality of information storage or generating devices which are grouped in operative association with common connectors along a cable common thereto by any of a plurality of remote stations which are also grouped in operative association with common connectors along a common cable. Means are provided for generating from a station a signal representative of a device address to transfer such signal to each of the devices. Means are provided for comparing the generated signal with device addresses registered in association with the devices whereby, upon identity therebetween, control of the device is effected to the generating station first to request such control. Feedback means are provided operative with the generating station and other stations to indicate the status of the device and its function, and to indicate when control thereof has been relinquished. Means enabling an overriding control station are also provided.

3,691,529
METHOD FOR LOCATING IMPEDANCE DISCONTINUITIES IN A WAVE PROPAGATING MEDIUM

Jack H. Pizante, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed July 8, 1970, Ser. No. 53,064
Int. Cl. G01v 1/28
U.S. Cl. 340—15.5 DP 19 Claims



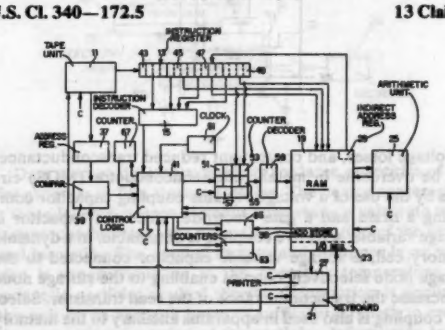
A method for digitally processing seismic data, or other similar data derived for propagating wave energy to produce a data image comprised of a plurality of coordinate points is described. Each coordinate point has a value which is a combination of the amplitude values taken from a plurality of primary seismic traces at the travel times on the respective primary traces required for energy to travel from the respective source points to the coordinate point and return to the respective receiving points of the seismic traces. More particularly, the combination is accomplished in such a way as to increase the signal-to-noise ratio by selected data to be combined at the respective coordinate points either on a predetermined basis or automatically by an analysis of the data.

3,691,530
Patent Not Issued For This Number

3,691,531
ELECTRONIC COMPUTER WITH CYCLIC PROGRAM MEMORY

Fabrizio Saltini, Modena, and Vittorio Eccettuato, Cornaredo, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea (Turin), Italy

Filed June 18, 1970, Ser. No. 47,338
Claims priority, application Italy, June 21, 1969, 52336 A/69
Int. Cl. G06f 13/02
U.S. Cl. 340—172.5 13 Claims



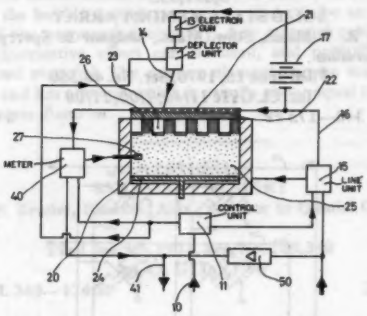
An electronic computer having a cyclic, serial access program storing tape memory and a random access memory for storing data. The random access memory also includes an input-output register and portions for storing the address of the next instruction to be executed in the program memory and an indirect address. A predetermined time after transferring an instruction to an instruction register the program memory checks to see if the execution of the instruction has been completed. If it hasn't been, the motion of the tape is stopped until it is completed. Also provided are means for shifting the contents of a selected data memory register.

3,691,532
Patent Not Issued For This Number

3,691,533
ELECTROCHEMICAL DATA STORAGE WITH ELECTRON BEAM ACCESSING

Richard Bogenberger, Oberneuching; Conrad Helmcke, Munich-Perlach; Athanasios Kritikos; Walter Kroy, both of Munich, and Walter E. Mehnert, Ottobrunn, all of Germany, assignors to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany

Filed April 20, 1970, Ser. No. 29,828
Claims priority, application Germany, May 23, 1969, P 19 26 529.3
Int. Cl. G11c 13/02, 11/00
U.S. Cl. 340—173 CH 6 Claims



Storage element for information using electrochemical means. Multiple, polarizable storage electrodes are provided and arranged spaced from and opposed to a nonpolarizable counterelectrode, all the electrodes being arranged within a chamber containing an electrolyte. Information is recorded onto the polarizable electrodes in a desired pattern by causing an electron beam to impinge thereon through a junction contact. Information is digitally obtained by directing the electron beam to selected locations which develops a voltage between one of the storage electrodes and the counterelectrode the magnitude of which depends upon the state of polarization of the storage electrode. Such voltage is then measured by an auxiliary electrode and delivered as an output.

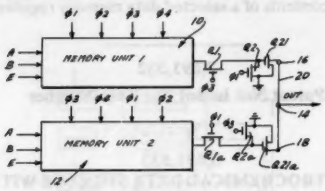
3,691,534
READ ONLY MEMORY SYSTEM HAVING INCREASED DATA RATE WITH ALTERNATE DATA READOUT

Andrew G. Varadi, Briarwood; Richard B. Rubinstein, New York, both of N.Y., and Steven Radoff, Nashua, N.H., assignors to General Instrument Corporation, Newark, N.J.

Filed Nov. 4, 1970, Ser. No. 86,882
Int. Cl. G11c 7/00, 19/00
U.S. Cl. 340—173 R 7 Claims

A permanent storage memory system comprises first and second memory units each having data stored thereon in different predetermined patterns. The outputs of each memory

unit are connected to a common memory output. Timing signals are applied to each memory unit in reverse order and the selected data is transferred to the common memory output from one unit and then the other during the first and second of these signals, respectively. For each memory unit, data is blocked from the output during the period of the timing signal in which the data is not being transferred, thereby to enable



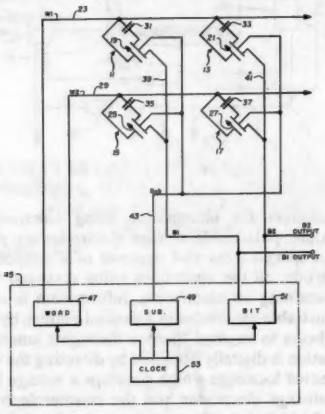
ready combination of the data signals from each unit at the memory output. Data from each unit may be scanned in a predetermined sequence, that sequence being initiated from a location in that unit determined by an address signal applied to the unit. The selection of that initial memory location is performed by means of a shift register in combination with a logic unit. The latter receives an address signal and presets the shift register in accordance therewith.

3,691,535

SOLID STATE MEMORY ARRAY

Thomas R. Williams, Stow, Mass., assignor to Sperry Rand Corporation

Filed June 15, 1970, Ser. No. 46,350
Int. Cl. G11c *11/40, 7/00, 11/00*
U.S. Cl. 340—173 PP **6 Claims**



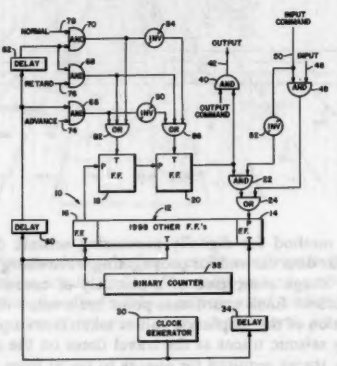
A memory array is made up of rows and columns of memory elements. Each memory element includes a known type of variable threshold insulated gate field effect transistor characterized by electrically controllable conduction thresholds established by potentials applied between the respective gate electrodes and substrates. Each of the variable threshold transistors in a given row has its gate electrode connected to a word line common to that row and its drain electrode capacitively coupled to the same word line. Each of the variable threshold transistors in a given column has its source electrode connected to a bit line common to that column. Information is written into the memory by first setting all of the variable threshold transistors to a given threshold and then reversing the threshold of certain variable threshold transistors selected in accordance with the information to be stored. Information is read out of the memory by means of a two-part readout cycle in which all of the variable threshold transistors corresponding to a selected word are subjected to a sampling pulse during which time actual readout occurs; then to a restoration pulse which subjects the variable threshold transistors corresponding to the selected word to potentials opposite to that of the sampling pulse.

3,691,536

VARIABLE LENGTH STORING DEVICE

John L. Peterson, Chicago, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Oct. 9, 1970, Ser. No. 79,593
Int. Cl. G11c *21/00, 19/00*
U.S. Cl. 340—173 RC **12 Claims**



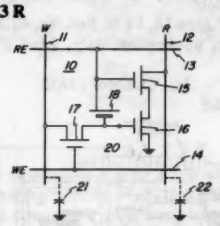
A system for controlling the operation of a recirculating memory having a binary counter to indicate the address of data in the memory, including two storage stages in the recirculating path of the memory, with gating to deliver timing pulses to the two storage stages so as to cause them selectively to provide two, one, or zero elements of data storage in the recirculation of data in order to influence the phasing between the recirculating memory and the binary counter.

3,691,537

HIGH SPEED SIGNAL IN MOS CIRCUITS BY VOLTAGE VARIABLE CAPACITOR

James F. Burgess, and Constantine A. Neugebauer, both of Schenectady, N.Y., assignors to General Electric Company

Filed May 26, 1971, Ser. No. 146,968
Int. Cl. G11c *11/24, 11/40*
U.S. Cl. 340—173 R **6 Claims**



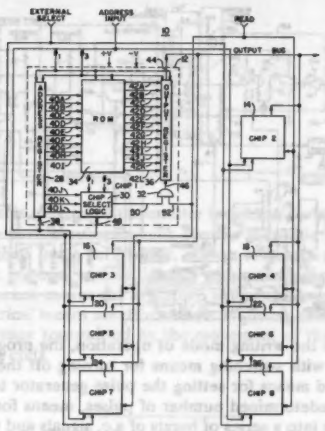
Voltage losses, and consequent reduced transconductance, can be overcome in metal-oxide-semiconductor (MOS) circuits by the use of a voltage variable coupling capacitor comprising a drain and a gate electrode. Since the capacitor is voltage variable, selective coupling is obtainable. In a dynamic memory cell, a voltage variable capacitor connected to the storage node selectively couples enabling to the storage node to increase the transconductance of the read transistor. Selective coupling is also used in apparatus ancillary to the memory cell to enhance the "refresh" operation. A flip-flop type of memory is also disclosed in which an enhanced output signal is obtained by selective coupling.

3,691,538

SERIAL READ-OUT MEMORY SYSTEM

Ralph D. Haney, Dayton, and Nicholas E. Aneshansley, Centerville, both of Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed June 1, 1971, Ser. No. 148,596
Int. Cl. G11c *17/00*
U.S. Cl. 340—173 SP 10 Claims



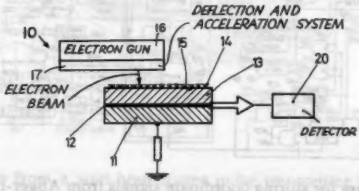
There is disclosed a read-only memory system which is constructed from integrated circuits. Each integrated circuit is responsive to a serial-by-bit address signal and provides a serial-by-bit output signal. Each integrated circuit includes an address and an output register, a read-only memory matrix, and integrated circuit select logic.

3,691,539

SUPERCONDUCTIVE DEVICE FOR ELECTRONIC STORAGE OF LARGE QUANTITIES OF DATA USING MAGNETIC PARTICLES

Klaus Dieter Erben; Walter Kroy; Sigmund Manhart, all of Munich, and Walter E. Mehnert, Ottobrunn, all of Germany, assignors to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany

Filed April 20, 1970, Ser. No. 29,827
Claims priority, application Germany, April 28, 1969, P 19 21 700.6
Int. Cl. G11c *11/44*
U.S. Cl. 340—173.1 8 Claims



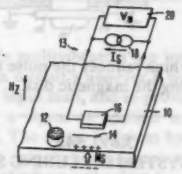
Data storage device particularly for large quantities of data for program or film storage systems. The device contemplates a three layered storage element comprising a substrate which is superconductive at the operating temperature of the device, and insulating film applied thereto and an upper layer which also is superconductive at the operating temperature with magnetic particles applied thereto. Information is applied to the unit by an electron beam of sufficient strength to modify the magnetic orientation of the particles. Information is read out from said unit by an electron beam of insufficient strength to modify the magnetic orientation of the particles but which will be affected by the magnetic field of said particles. Such modification is reflected in the frequency and intensity of the electromagnetic wave emitted from the three layered unit which can then be read by any convenient frequency discriminating device.

3,691,540

INTEGRATED MAGNETO-RESISTIVE SENSING OF BUBBLE DOMAINS

George S. Almasi, Purdy Station; Hsu Chang, Yorktown Heights; George E. Keefe, Montrose, and David A. Thompson, Somers, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 6, 1970, Ser. No. 78,531
Int. Cl. G11c *11/14*
U.S. Cl. 340—174 TF 29 Claims



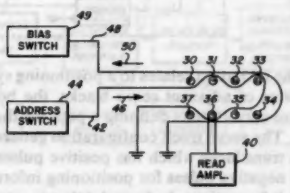
An integrated magneto-resistive sensor for detection of magnetic bubble domains. The sensor is located on the chip in which the bubble domains propagate and can be an integral part of the propagation circuitry. Any material exhibiting a magneto-resistive effect can be used, and permalloy is a preferred material. The sensing element can be made very small, and has a length which is usually about equal to a bubble domain diameter.

3,691,541

READ ONLY MEMORY

John F. Bruder, Phoenix, Ariz., assignor to Quadri Corporation

Filed Jan. 25, 1971, Ser. No. 109,340
Int. Cl. G11c *17/00*
U.S. Cl. 340—174 SP 3 Claims



A read only memory is provided utilizing a plurality of storage cells, each including a cylindrical slug of ferrite material having a read winding thereon: address lines pass between the storage cells and inductively couple the slugs in either a predetermined sense or an opposite sense. An electrostatic shield is provided and a bias winding is inductively coupled to each of the slugs to facilitate error-free reading of the memory contents.

3,691,542

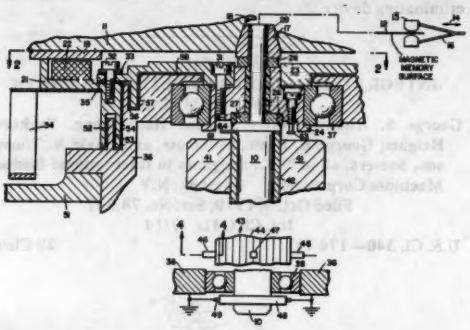
MAGNETIC MEMORY DISK DRIVE APPARATUS WITH REDUCED R. F. NOISE

Andrew Gabor, Danville, Calif., assignor to Diablo Systems, Inc., Hayward, Calif.

Filed Nov. 2, 1970, Ser. No. 85,844
Int. Cl. G11b *23/02*
U.S. Cl. 340—174.1 B 15 Claims

A magnetic memory disk drive apparatus with reduced R.F. noise includes a d.c. drive motor. The disk is coupled to the

motor shaft by a drive plate and a drive plate hub which have surfaces interleaved with a grounded housing to provide a



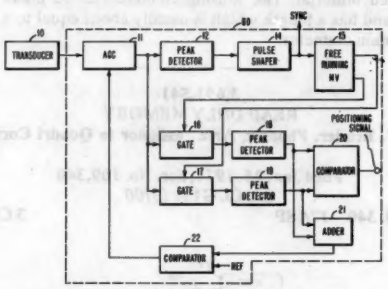
shunt capacitance which reduces the noise signal produced by commutation reaching the magnetic disk.

3,691,543

POSITIONING SYSTEM INCLUDING SERVO TRACK CONFIGURATION AND ASSOCIATED DEMODULATOR

Francis E. Mueller, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 8, 1971, Ser. No. 113,484
Int. Cl. G11b *5/02*
U.S. Cl. 340—174.1 B **10 Claims**



The invention relates to a positioning system which provides a series of adjacent servo tracks, the boundary between adjacent servo tracks defining a path for the servo system to follow. The servo track configuration generating an output signal in a transducer which has positive pulses for synchronization and negative pulses for positioning information and gain control information. A demodulator is used for separating the synchronization signal from the position and gain control signals. The synchronization signal is used to separate portions of the positioning and gain control signal so as to generate a positioning signal that is indicative of the position of the transducer with respect to the servo tracks and for generating an automatic gain control signal for the demodulator itself.

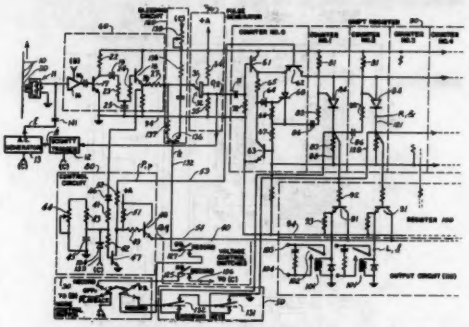
3,691,544

CONTROL CIRCUIT RESPONSIVE TO SYNCH SIGNALS

Harold Gallina, 40 Parkview Ave., Belleville, N.J.

Filed June 22, 1971, Ser. No. 155,430
Int. Cl. G11b *15/02*
U.S. Cl. 340—174.1 B **10 Claims**

An electronic programmer includes means for writing and reading a control signal from a recording medium, and means for switching the programmer from the writing to the reading mode of operations and vice versa. For the readout mode of operation the programmer is provided with means for detecting bursts of a.c. signals from the recording medium and means responsive to the a.c. signals for generating a pulse train having a number of pulses corresponding to the number of the a.c. signal bursts, a control circuit responsive to the detected a.c. signals for generating a reset signal and a register signal, a shift register responsive to the reset signal for counting the number of pulses from the pulse generating means and generating an output signal, and a register responsive to the register signal for applying the output signal to a load. To



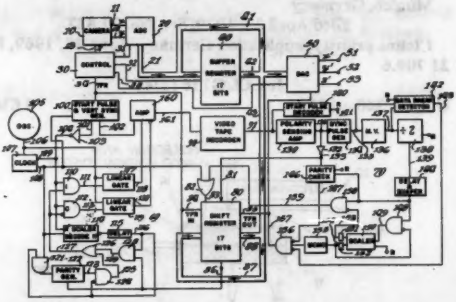
change to the writing mode of operation, the programmer is provided with switching means for turning off the detecting means and means for setting the pulse generator to generate only a predetermined number of pulses, means for encoding the pulses into a series of bursts of a.c. signals and writing the bursts of the encoded a.c. signals on the recording medium. The programmer may be also provided with means for erasing any prerecorded signal on the recording medium while the control signal is being recorded.

3,691,545

DIRECT DATA STORAGE SYSTEM FOR SCINTILLATION CAMERA

Gene E. Clark, Arlington Heights, Ill., assignor to Nuclear-Chicago Corporation, Des Plaines, Ill.

Filed June 23, 1969, Ser. No. 835,671
Int. Cl. G11b *5/02*
U.S. Cl. 340—174.1 G **13 Claims**



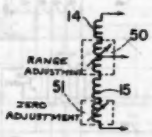
System for storing coordinate signals from Anger-type scintillation camera on magnetic tape in a video tape recorder system. An ADC circuit digitizes the coordinate signals and a buffer register stores the digitized signals as a binary digital word. The randomly occurring words are written on the video tape as they occur by transferring each word into a shift register and producing a start data pulse followed by a series of PSK waveforms representing the bits of the word. A parity bit and a series of synchronizing bits are produced until the next data word appears. The data words are recovered in the sequence and timing of their occurrence by replaying the video tape into a simple synchronized demodulation apparatus.

3,691,546

VARIABLE RELUCTANCE TRANSMITTER

Craig E. Ebner, Ambler, and Jeffry V. Markley, Sellersville, both of Pa., assignors to Ametek, Inc., New York, N.Y.

Filed April 29, 1970, Ser. No. 32,830
Int. Cl. G08c 19/08
U.S. Cl. 340—196 2 Claims



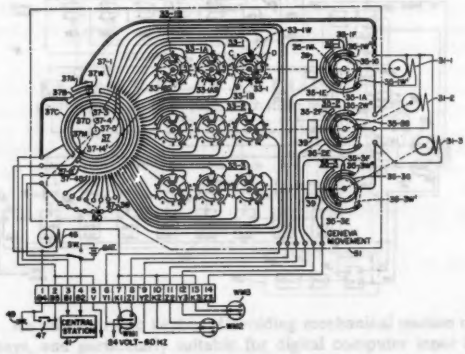
A variable reluctance transmitter is disclosed wherein a pair of axially positioned coils have annular magnetic pole members on their inner peripheries, and an armature member of magnetic material moves linearly within the pole members. Sensor means moves the armature within the pole members and electrical means are provided for adjusting selectively the voltage range transmitted by the movement of the armature within the coils.

3,691,547

METER READING SYSTEM HAVIN DIGITAL ENCODER

George Winfred Lipscomb, Raleigh, N.C., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 30, 1970, Ser. No. 85,514
Int. Cl. G08c 19/28, 9/08
U.S. Cl. 340—204 7 Claims



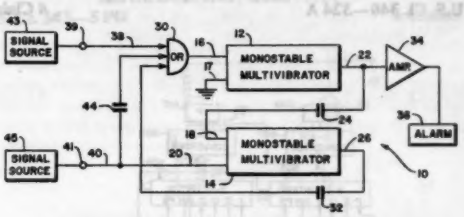
Pulses from a watt-hour meter pulse transmitter are supplied to an electric motor having a rotation controller which includes control tracks and brushes. This controller causes the motor to operate for a definite angular rotation for each received pulse. Rotation of the motor shaft supplies an input to an analog-to-digital converter. The converter has two segmented tracks and two brushes which provide a two-out-of-four code. A scanning device has scan contacts connected to the segments of the tracks for transmitting coded information from the converter to a receiving station. The scanning device may interrogate sequentially a number of similar converters. The controller scanning device and converter have components printed on a common printed-circuit board.

3,691,548

ALARM CIRCUIT

Patrick J. Heneghan, Chicago, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Aug. 19, 1970, Ser. No. 65,069
Int. Cl. G08b 21/00
U.S. Cl. 340—248 P 11 Claims



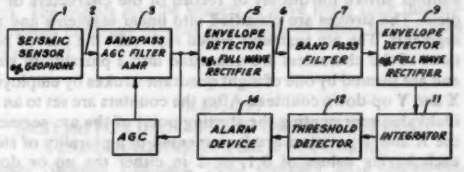
Two monostable multivibrators are interconnected to provide a single alarm output whenever a signal is applied to the circuit over a first input lead, and to provide a repetitive alarm output whenever a signal is applied to the circuit over a second input lead. The alarm is driven by the output from the first multivibrator, which output occurs once with each individual signal applied over the first input lead. Whenever a signal is applied over the second input lead the two multivibrators operate alternately for the duration of the signal, the output from the first multivibrator both driving the alarm and providing an input to the second multivibrator, and the output from the second multivibrator providing an input to the first multivibrator.

3,691,549

SIGNAL PROCESSOR

Dennis L. Wilson, Palo Alto, Calif., assignor to Sylvania Electric Products, Inc.

Filed Dec. 2, 1970, Ser. No. 94,404
Int. Cl. G08b 21/00
U.S. Cl. 340—261 10 Claims



A geophone senses seismic vibrations in the earth and converts them to electrical seismic signals which are amplified and filtered in an active bandpass filter-amplifier having automatic gain control and a 10–40 Hz. passband. The amplified and filtered signal is rectified in a first full-wave rectifier, is subsequently filtered in a circuit having a 1–4 Hz passband. characteristic, and is again rectified in a second full-wave rectifier. The latter rectified signal is summed by an integrator over a 10-second time interval and is applied to a threshold circuit. If the sum signal exceeds a prescribed threshold level, the threshold circuit produces an output signal indicating that the seismic vibrations are burst-type seismic vibrations such as are produced by a man walking in the area of detection of the geophone.

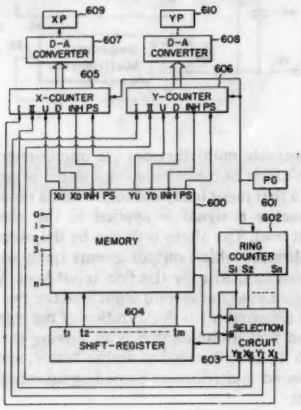
3,691,550

Patent Not Issued For This Number

3,691,551
SYSTEM FOR GENERATING TRACING SIGNALS FOR DISPLAYING OR RECORDING CHARACTERS

Toshio Kashio, Tokyo, Japan, assignor to Casio Computer Kabushiki Kaisha, Tokyo, Japan

Filed April 28, 1970, Ser. No. 32,539
Claims priority, application Japan, May 2, 1969, 44/33587
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A **4 Claims**



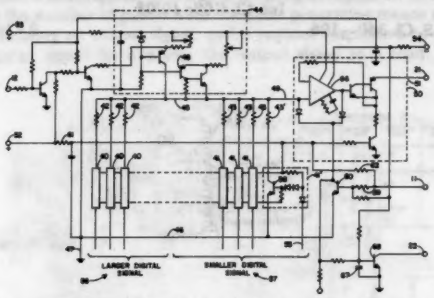
In a display or recording device such as cathode ray tube or ink jet recording apparatus, the characters or indicia to be displayed or recorded are resolved into a plurality of strokes representative of X and Y components of the X-Y coordinate system to electrically store them in a memory. Then, the memory is interrogated to read out the information stored therein, and in accordance with the read-out information, control signals are generated to control the horizontal and vertical deflection electrodes to synthesize one stroke with another stroke for display or record of the characters or indicia. The strokes are classified into linear segments and arc segments. The arc segments which represent the curved portions of the characters are quantized into a plurality of steps and are formed by one of eight quadrant strokes by employing X and Y up-down counters. After the counters are set to an initial value representing the starting point of the arc segment, the X and Y counters are incremented in a plurality of steps each having values of 0,1, or 2 in either the up or down direction.

3,691,552
INVERSE DIGITAL TO ANALOG CONVERTER

James T. Shiosaki, Azusa, Calif., assignor to Honeywell Inc., Minneapolis, Minn.

Division of Ser. No. 806,366, March 12, 1969, Pat. No. 3,588,871. This application May 17, 1971, Ser. No. 143,886
Int. Cl. H03k *13/14*
U.S. Cl. 340—347 DA **8 Claims**

A digital to analog conversion circuit for producing an analog signal proportionally related to the length of a line segment whose quadrature components are represented by a pair of digital signals. The circuit comprises a constant current source and a current sink connected by current path means whose impedance is varied in accordance with the sum of first and second fractions of the larger and smaller digital signals respectively to produce the analog voltage at the input to the current path means. The current path means may comprise a plurality of parallel weighted resistive elements, each in series

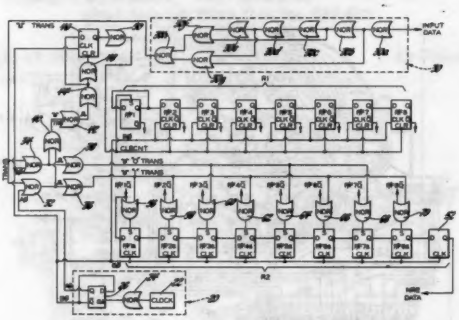


with a digitally controlled switching element. A logic circuit is provided for directing the larger and smaller digital signals to the appropriate switching elements.

3,691,553
METHOD AND APPARATUS FOR DECODING DIGITAL INFORMATION

Duane E. McIntosh, Palmyra, Wis., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 1, 1970, Ser. No. 93,983
Int. Cl. H03k *13/24*
U.S. Cl. 340—347 DD **7 Claims**



An apparatus and method is disclosed for constructing a non-return-to-zero bit stream from a coded bit stream containing transitions which occur at the boundary of a bit cell to represent a pair of "1's" and between the boundaries of a bit cell to represent a pair of "0's". Logic gate means determine which pair of like bits caused a transition in the coded bit stream by comparing the time of the transition with respect to bit cell time. The pairs of like bits so determined are stored in a shift register and the intervening data between the pairs of like bits is placed in the shift register with the sequence being determined by the number of bits between successive transitions and the pair of like bits which caused the second of the successive transitions in the coded bit stream.

3,691,554

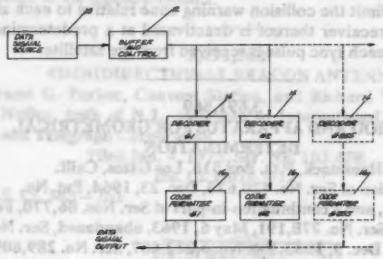
CODE CONVERTERS

Peter Marschall, 6040 Seiler Dr., Cincinnati, Ohio

Continuation-in-part of Ser. No. 877,975, Nov. 19, 1969. This application June 18, 1971, Ser. No. 154,570

Int. Cl. G06f 3/00

U.S. Cl. 340—347 DD 5 Claims



An electronic code converter which will accept data signals of a predetermined format having a specified number of bits from a first data processing apparatus and converts such data signals to a different code format having a specified number of bits for use by a second data processing apparatus.

3,691,555

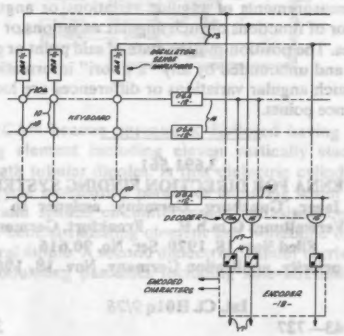
ELECTRONIC KEYBOARD

Floyd W. Looschen, Arcadia, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed March 30, 1970, Ser. No. 23,712

Int. Cl. G08c 1/00

U.S. Cl. 340—365 9 Claims



An all-electronic keyboard avoiding mechanical motion of keys, and particularly suitable for digital computer input is described. The keyboard has a matrix of keys located at intersections of columns and rows and electronic oscillations are established in circuits including keys of the keyboard. When an individual key is contacted manually, the change in capacitance detunes the oscillating circuit in the column and row in which the selected key lies. Electronic sensors and decoders note the column and row involved and provide a signal unique to the key touched. In one embodiment a separate oscillator is employed for each line of the matrix, and in another embodiment a single oscillator is employed for the entire matrix. Geometrical arrangements of conductors on individual keys are described with the branches of forked conductors interlaced for capacitive coupling. In one embodiment an additional conductor is sinuously interposed between branches of a pair of forked conductors.

3,691,556

DETECTION OF MOVEMENT IN CONFINED SPACES

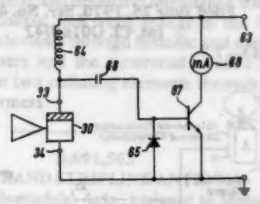
John Anthony Bloice, Richmond, Surrey, England, assignor to Memco (Electronics) Limited, Middlesex, England

Filed Jan. 19, 1971, Ser. No. 107,808

Claims priority, application Great Britain, May 3, 1970, 26,858/70; July 28, 1970, 36,521/70

Int. Cl. G01s 9/42; G08b 13/24

U.S. Cl. 343—5 PD 6 Claims



A radar unit comprises a single microwave launching and receiving antenna, and a microwave oscillator feeding microwave energy to the antenna. A second oscillator is arranged to oscillate at a frequency much lower than that of the microwave energy, and includes an element common to the microwave oscillator. This common element is adapted to respond to load changes on the microwave oscillator, caused by changes in the standing wave pattern of the antenna, by varying at least one oscillation characteristic of the signal provided by the second oscillator. These changes are monitored to provide an indication of the presence and movement of objects in front of the antenna. The microwave oscillator includes a Gunn diode mounted within a resonant cavity and tuned to oscillate at the microwave frequency. An inductance connected in series with the cavity provides a series-tuned circuit of the second oscillator, the cavity providing the common element. The lower frequency oscillations are limited to lie within a predetermined range to improve the sensitivity of the arrangement. This may be done with a feedback circuit. Three such units may be mounted on a common support so as to lie in respective vertical planes at 120° to one another, their combined responses overlapping to provide unbroken coverage in horizontal plane surrounding the common support. The aerials may be shaped to have lobes such that the unbroken coverage extends to a range of some 30 feet from the support.

3,691,557

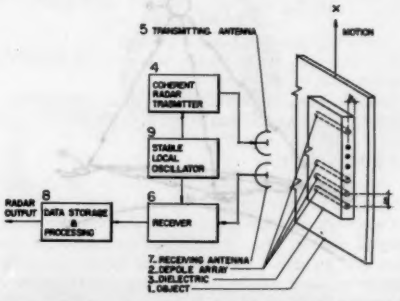
SYSTEM FOR IDENTIFYING OBJECTS USING AN ENCODING ARRAY FOR EACH OBJECT

James Nickolas Constant, 1603 Danbury Dr., Claremont, Calif.

Filed Sept. 22, 1969, Ser. No. 870,598

Int. Cl. G01s 9/56

U.S. Cl. 343—6.5 SS 5 Claims



A system for identifying binary coded objects. A passive encoding array for an object and having dipoles at selected

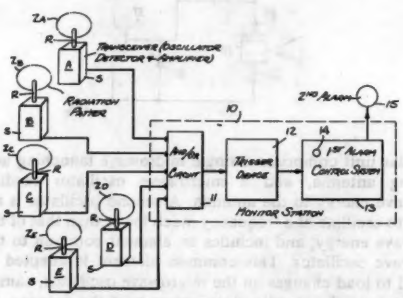
dipole locations in the array, and a synthetic aperture radar for scanning the arrays as the objects move relative to the radar. The radar output is a pulse train with pulses corresponding to dipoles of arrays illuminated by the radar.

3,691,558

MOVING OBJECT MICROWAVE DETECTION SYSTEM

Norman F. Hoard, Milton, Mass., and Lee Edick, Manasquan, N.J., assignors to Entron, Inc., Glendale, N.Y.

Filed June 25, 1970, Ser. No. 49,602
Int. Cl. G01s 9/42
U.S. Cl. 343—7.7 **8 Claims**



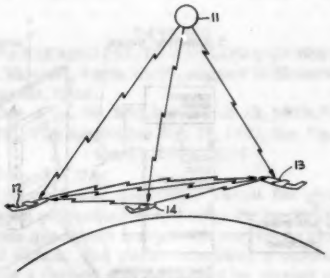
A moving object microwave detection system for sensing the presence of objects moving within a radiation zone and for sounding an alarm in the event the disturbing factor is a human intruder. The system includes one or more field transceivers placed at suitable points in the areas to be protected, each transceiver including a microwave oscillator and an antenna coupled thereto to radiate continuous wave energy covering a limited zone. Coupled to the antenna is a mixing detector which provides a low-frequency beat signal in response to energy reflected back to the antenna and resulting from the presence of a moving object in the zone. The signal from the detector is fed to an amplifier having a narrow frequency band-pass characteristic which limits the response thereof to bear signals indicative of the movement of human intruders. The output of the transceiver is fed to a monitoring station which is adapted to activate a low-intensity alarm for short-term disturbances, a high-intensity alarm being sounded only when the disturbance persists.

3,691,559

AIRCRAFT COLLISION WARNING SYSTEM

Homer E. Jackson, McLean, Va., assignor to Navsat Corporation

Filed March 28, 1969, Ser. No. 811,287
Int. Cl. G01s 11/00
U.S. Cl. 343—112 D **28 Claims**



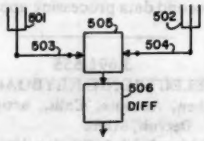
An aircraft collision avoidance system and method involves transmitting a stable reference frequency from a synchronous satellite to aircraft in a region being monitored. Each aircraft in the region receives the reference frequency and transmits a carrier, modulated with the received reference frequency, to other aircraft in a collision avoidance zone. At the other aircraft, an indication of impending collision is provided by measuring the rate of change of the carrier Doppler frequency shift received thereby from the first named aircraft. Sync pulses periodically modulate the reference frequency transmitted from the satellite for aircraft ranging and data control purposes. To limit the collision warning zone relative to each aircraft, the receiver thereof is deactivated at a predetermined time after each sync pulse is received from the satellite.

3,691,560

METHOD AND APPARATUS FOR GEOMETRICAL DETERMINATION

Calvin M. Hammack, P.O. Box 516, Los Gatos, Calif.

Division of Ser. No. 420,623, Dec. 23, 1964, Pat. No. 3,445,847, and a continuation-in-part of Ser. Nos. 86,770, Feb. 2, 1961, Ser. No. 278,191, May 6, 1963, abandoned, Ser. No. 335,454, Dec. 5, 1963, Pat. No. 3,242,487, Ser. No. 289,609, June 21, 1963, Pat. No. 3,286,263, and Ser. No. 312,598, Sept. 30, 1963, Pat. No. 3,270,340. This application April 21, 1969, Ser. No. 817,765
Int. Cl. G01s 3/46
U.S. Cl. 343—113 R **67 Claims**



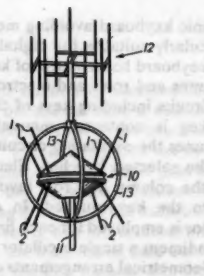
This invention relates to a method and means of determining at least one dimension of the position-motion state of one or more points relative to a number of reference points by performing measurements of angular variations or angular differences, or of functions of such angular variations or angular differences. The position-motion state of said point or points is unknown and unbounded by any "a priori" information. The apexs of such angular variations or differences are located at the reference points.

3,691,561

ANTENNA FOR DIRECTION FINDING SYSTEMS

Gerhard Jager, Gunzburg, Germany, assignor to Licentia Patent-Verwaltungs G.m.b.H., Frankfurt, Germany

Filed Nov. 18, 1970, Ser. No. 90,616
Claims priority, application Germany, Nov. 18, 1969, P 19 57 787.8
Int. Cl. H01q 9/28
U.S. Cl. 343—727 **3 Claims**



An antenna arrangement for a shipboard direction finding system is designed to be carried on the ship mast and includes electrically parallel connected, substantially vertically

polarized dipole antennas which are uniformly distributed circumferentially in a circle with their radiating elements outwardly inclined from the antenna mast and forming an angle of approximately 30° therewith. A motor controlled rotating differential condenser is connected between the dipole halves and ground to provide means for bringing the dipoles into capacitive symmetry. The antenna arrangement is adapted to be used in proximity to a mast-carried UHF direction finding antenna system through the use of two-terminal networks connected to the dipole elements.

3,691,562

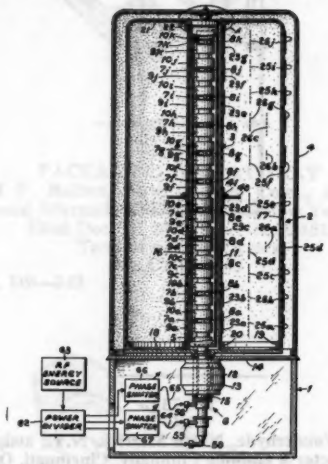
OMNIDIRECTIONAL BEACON ANTENNA

Ernest G. Parker, Convent Station, and Richard W. Craine, Nutley, both of N.J., assignors to International Telephone and Telegraph Corporation

Filed Jan. 4, 1971, Ser. No. 103,458

Int. Cl. H01q *3/12*

U.S. Cl. 343—761 **12 Claims**



A TACAN beacon antenna is disclosed having a central radiating element including eleven vertically stacked half wavelength tubular dipoles. A first dielectric cylinder carries the 15 cycle modulating parasitics including seven vertically aligned and spaced circumferentially parasitics coextensive with the central radiating element and a metallic disc below the central dipole. A second dielectric cylinder carries the 135 cycle modulating parasitics including nine circumferentially spaced groups of parasitic components, each group containing 10 vertically aligned and spaced parasitics and three vertically aligned and spaced parasitics intermediate adjacent groups. The radiating elements are fed by three concentric coaxial lines disposed coaxially of the vertical axis of the radiating elements and extending through the hollow drive shaft of a motor disposed coaxially of the vertical axis to drive the two modulating cylinders. The outer conductor of an inner coaxial line is the center conductor of an outer coaxial line such that the inner coaxial line feeds energy to the upper five radiating elements through metallic and dielectric impedance transformers the intermediate coaxial line feeds energy to the four intermediate radiating elements through metallic and dielectric impedance transformers and the outermost coaxial line feeds energy to the lower two radiating elements through dielectric impedance transformers.

3,691,563

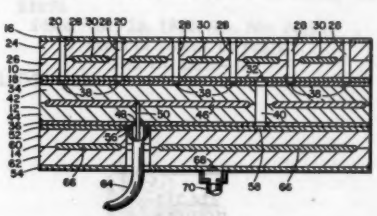
DUAL BAND STRIPLINE ANTENNA

Philip L. Shelton, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Dec. 11, 1970, Ser. No. 97,147

Int. Cl. H01q *13/10*

U.S. Cl. 343—771 **5 Claims**



A dual band antenna is disclosed in which the radiating elements for each band are slots in a conductive sheet and in which the slots are fed by wave guides and stripline distribution means. The conductive sheet is an outside layer of a sandwich comprising two outside conductive layers and two sheets of dielectric between said outside layers and said stripline distribution means or transmission line, between the dielectric sheets. Two additional similar sandwiches are used having therein transmission lines and couplings thereto for the two waves to be radiated. The outside layer of a middle sandwich is in close contact with an outside layer of the two other sandwiches, whereby there is no radiation from between the sandwiches. To make this close contact possible, the sandwiches are made with flat smooth outside surfaces and the sandwiches are not held together in a manner that may cause a bumpy surface.

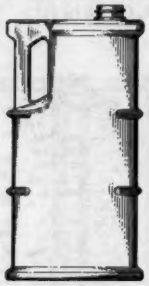
DESIGNS

SEPTEMBER 12, 1972

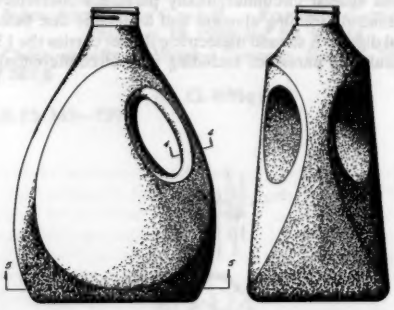
224,730
DRAWER FOR A CABINET OR SIMILAR ARTICLE
Robert L. Propst, Ann Arbor, and James O. Kelley, Saline, Mich., assignors to Herman Miller Inc., Zeeland, Mich.
Filed Oct. 26, 1970, Ser. No. 25,646
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—191

224,731
BOTTLE
Le Roy B. Nathan, 1446 Ashbel Ave., Berkeley, Ill. 60163
Filed Nov. 24, 1970, Ser. No. 26,143
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—23

224,732
BOTTLE
James C. McKinney and William D. West, Greenville, S.C., assignors to Morton-Norwich Products, Inc.
Filed May 3, 1971, Ser. No. 140,002
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—40

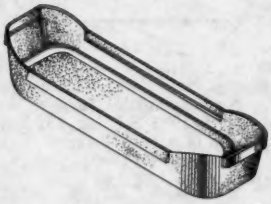


224,733
JUG
Harold J. Vanderhyde, North Merrick, N.Y., assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Aug. 30, 1971, Ser. No. 176,425
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—42

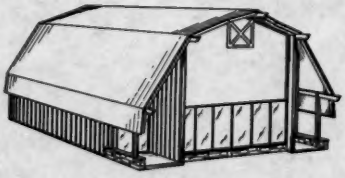


224,734
MOLDED PACKAGING TRAY FOR MEAT OR THE LIKE
Richard F. Reifers, New Canaan, Conn., and Kenneth D. Bixler, Huntington, N.Y., assignors to Diamond International Corporation, New York, N.Y.
Filed Jan. 27, 1971, Ser. No. 110,377
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219

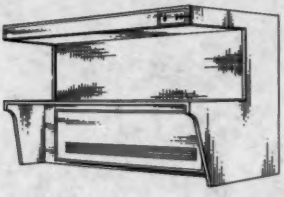
224,735
PACKAGING DISPLAY TRAY
Richard F. Reifers, New Canaan, Conn., assignor to Diamond International Corporation, New York, N.Y.
Filed Dec. 17, 1970, Ser. No. 26,551
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—243



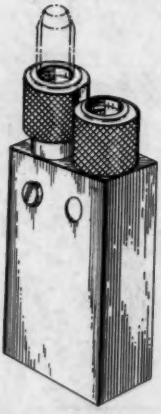
224,736
DRIVE-IN FOOD PREPARATION BUILDING
Gerald B. Cox, Bettendorf, Iowa, assignor to Yum-Yum Barns, Inc., Davenport, Iowa
Filed Nov. 18, 1970, Ser. No. 26,067
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



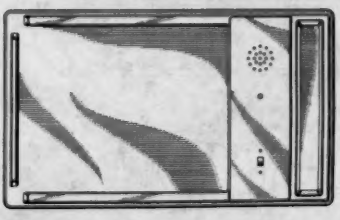
224,737
CLEAN AIR WORK STATION
Anthony M. Diccianni, Norristown, Pa., assignor to Laminar Flow, Inc., Conshohocken, Pa.
Filed Oct. 27, 1969, Ser. No. 19,738
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D16—2



224,738
CHEMICAL DISCHARGE DEVICE
Albert R. Hogarth, Carrell Road, Phoenix, Md. 21131, and James R. Dickson, 127 Hanover Road, Hanover, Md. 21076
Filed Nov. 20, 1970, Ser. No. 26,099
Term of patent 14 years
Int. Cl. D22—*99*
U.S. Cl. D22—99

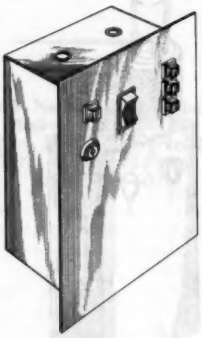


224,739
TEACHING DEVICE
Jack L. Lamberson, Baytown, Tex. (101-K Chestnut St., Foxboro, Mass. 02035)
Filed Mar. 17, 1971, Ser. No. 125,461
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D25—1

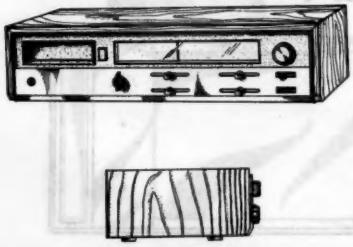


224,740
HOOD FOR ELECTRICAL CONNECTOR
Gerald J. Galang, Canoga Park, David E. Rienhardt, Santa Susana, and George G. Weaver, Chatsworth, Calif., assignors to American Data Systems, Inc., Canoga Park, Calif.
Filed Jan. 7, 1971, Ser. No. 104,846
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1

224,741
BAPTISTRY CONTROL CONSOLE
Robert Norman Klob, Arlington, Tex., assignor to Hydrodynamics, Inc., Fort Worth, Tex.
Filed Dec. 24, 1970, Ser. No. 26,637
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13

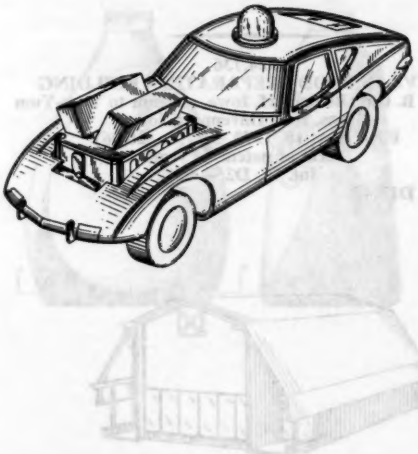


224,742
COMBINED 8-TRACK TAPE TRANSPORT, AMPLIFIER AND TUNER THEREFOR
Naoki Tominaga, Osaka, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan
Filed June 28, 1971, Ser. No. 157,798
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14

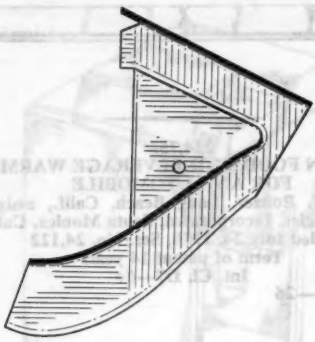


224,743
SPINNING TOY
Wolfgang Harzmann, 228 E. 95th St., New York, N.Y. 10028
Filed Dec. 15, 1970, Ser. No. 26,516
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15

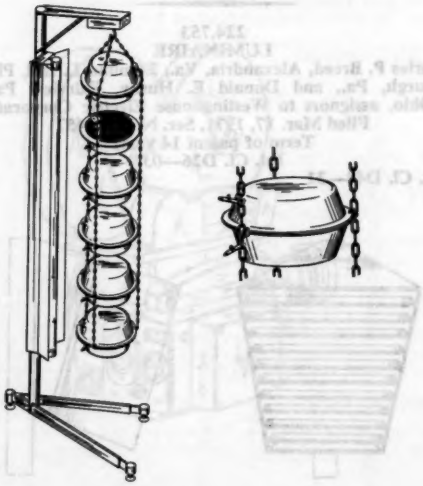
224,744
TOY AUTOMOTIVE VEHICLE
Norman Spiegel, New York, N.Y., assignor to Nasta Industries, Inc.
Filed Apr. 5, 1971, Ser. No. 131,286
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



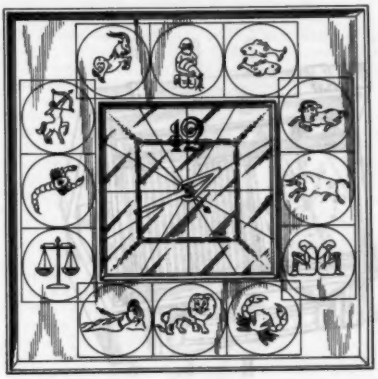
224,745
SEED PLACEMENT TUBE FOR AGRICULTURAL PLANTERS
Donald E. Williams, Garden City, Kans., assignor to Acra-Plant, Inc., Newton, Kans.
Filed Mar. 25, 1971, Ser. No. 128,216
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D35—2



224,746
HYDROPONIC GARDEN UNIT
Leslie B. Kyle, Indianapolis, Ind., assignor to Key Hydroponics Ltd., Vancouver, British Columbia, Canada
Filed Jan. 6, 1971, Ser. No. 104,548
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D35—3

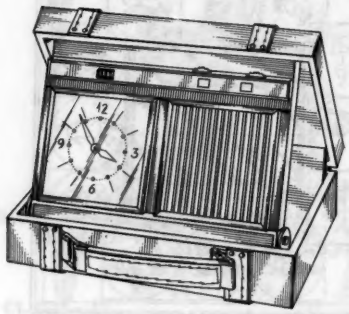


224,747
CLOCK OR SIMILAR ARTICLE
Theodore G. Daher, Stratford, Conn., assignor to General Electric Company
Filed Mar. 11, 1971, Ser. No. 123,482
Term of patent 3½ years
Int. Cl. D10—*01*
U.S. Cl. D42—7

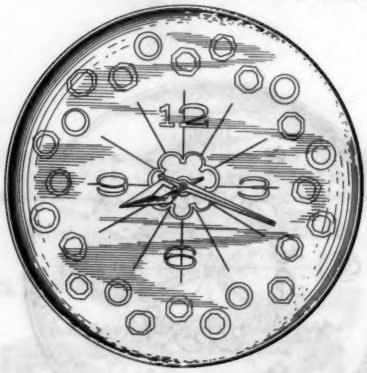


224,748
CLOCK OR SIMILAR ARTICLE
Theodore G. Daher, Stratford, Conn., assignor to General Electric Company
Filed May 10, 1971, Ser. No. 142,094
Term of patent 3½ years
Int. Cl. D10—*01*
U.S. Cl. D42—7

224,749
CLOCK RADIO
Samuel Cohen, 666 Wildwood Road, West Hempstead, N.Y. 11552
Filed June 8, 1971, Ser. No. 151,159
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7

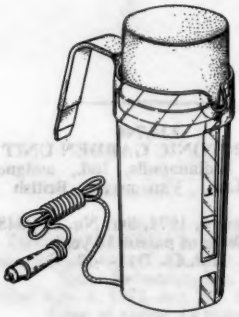


224,750
CLOCK OR SIMILAR ARTICLE
Theodore G. Daher, Stratford, Conn., assignor to General Electric Company
Filed June 10, 1971, Ser. No. 152,003
Term of patent 3½ years
Int. Cl. D10—*01*
U.S. Cl. D42—7

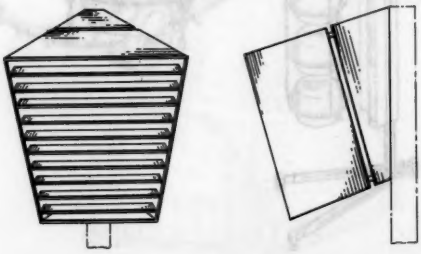


224,751
TRAY
Robert L. Propst, Ann Arbor, and James O. Kelley, Saline, Mich., assignors to Herman Miller, Inc., Zeeland, Mich.
Filed Oct. 26, 1970, Ser. No. 25,637
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D44—10

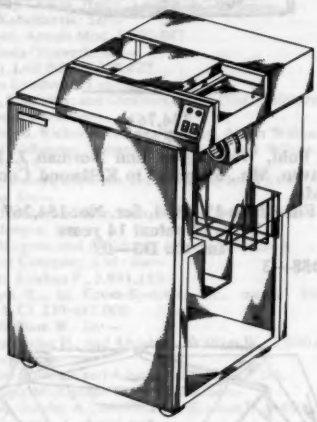
224,752
PLUG-IN FOOD AND BEVERAGE WARMER FOR AN AUTOMOBILE
Lawrence W. Bonzer, Long Beach, Calif., assignor to Lear-Siegler, Incorporated, Santa Monica, Calif.
Filed July 24, 1970, Ser. No. 24,122
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D44—26



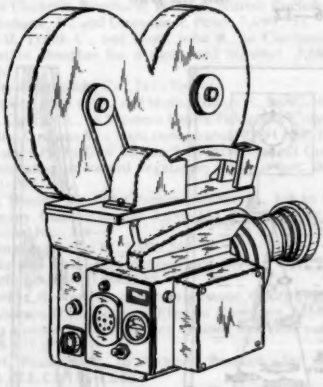
224,753
LUMINAIRE
Charles P. Breed, Alexandria, Va., Edmund L. Izzi, Pittsburgh, Pa., and Donald E. Husby, Fairview Park, Ohio, assignors to Westinghouse Electric Corporation
Filed Mar. 17, 1971, Ser. No. 125,457
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—31



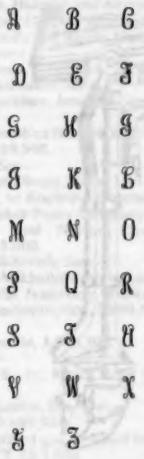
224,754
XEROGRAPHIC LABEL MAKING MACHINE
John F. Zinni, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Apr. 5, 1971, Ser. No. 131,007
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1

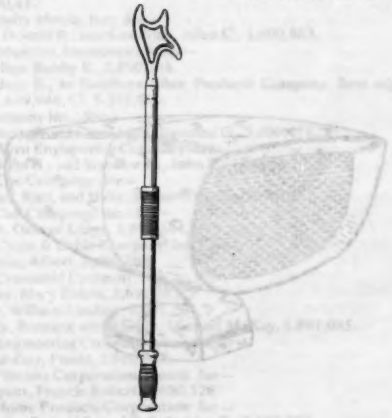


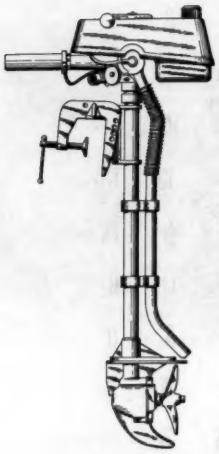
224,755
MOTION PICTURE CAMERA
James Frezzolini, Ringwood, N.J., assignor to Frezzolini Electronics Inc., Hawthorne, N.J.
Filed Apr. 28, 1971, Ser. No. 138,388
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D61—1



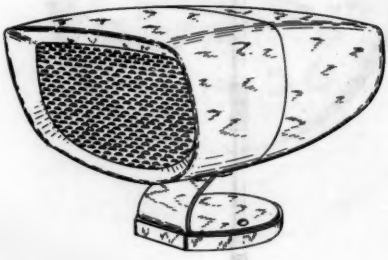
224,756
ALPHABET FOR MONOGRAMS OR THE LIKE
George Berlant, Bellerose, N.Y., assignor to New Hermes Engraving Corporation, New York, N.Y.
Original design application Nov. 12, 1969, Ser. No. 20,033. Divided and this application Feb. 8, 1971, Ser. No. 113,815
Term of patent 14 years
Int. Cl. D18—*03*
U.S. Cl. D64—16



224,757
BOAT HOOK
Hugh R. Bolen, Jr., Lexington, Va., assignor to Magnetic Forming Corporation, Lexington, Va.
Filed Nov. 2, 1970, Ser. No. 25,791
Term of patent 14 years
Int. Cl. D12—*99*
U.S. Cl. D71—1

224,758
BOAT ENGINE
William P. Kitovich, Hampden, Mass., assignor to K & P Products, Inc., Chicopee Falls, Mass.
Filed Feb. 23, 1971, Ser. No. 118,214
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D71—1

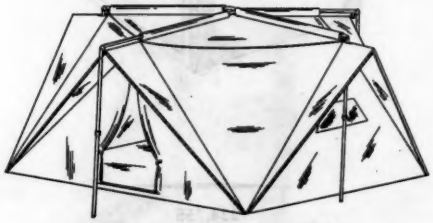


224,759
MARINE HORN
Harry R. Bingham, 1110 Polynesia Drive, San Mateo, Calif. 94404
Filed Nov. 6, 1970, Ser. No. 25,861
Term of patent 14 years
Int. Cl. D29—*02*
U.S. Cl. D72—1



224,760
CIGARETTE HOLDER
Milton P. Chernack, West Hempstead, N.Y., assignor to Delcron Products, Inc., New York, N.Y.
Filed Dec. 14, 1970, Ser. No. 26,466
Term of patent 14 years
Int. Cl. D27—*02*
U.S. Cl. D85—8

224,761
TENT
Harold J. Pohl, Washington, and Norman J. Diederich, New Haven, Mo., assignors to Kellwood Company, St. Louis, Mo.
Filed June 17, 1971, Ser. No. 154,267
Term of patent 14 years
Int. Cl. D3—*03*
U.S. Cl. D88—3



224,762
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Ronald F. Gentzen, Tulsa, Okla., assignor to Lowrance Electronics Manufacturing Corporation, Tulsa, Okla.
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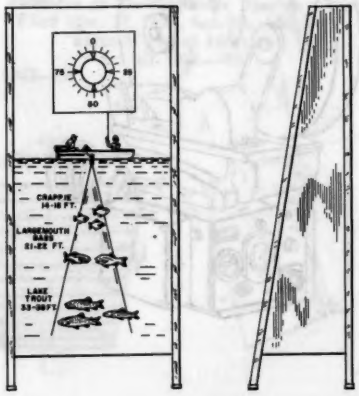

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PATENTS WERE ISSUED ON THE 12TH DAY OF SEPTEMBER, 1972

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Van de Belo, Roelof; Begemann, Heinrich K. S. P.; Bos, Hendrikus J.; and Mann, Adriaan B., 3,690,389.
Behrmann, Georg: *See—*
Fischer, Hans Jurgen; and Behrmann, Georg, 3,690,485.
Beiersdorf Aktiengesellschaft: *See—*
Guse, Gunter; and Pietsch, Hanns G., 3,690,937.
Bekassy, Sandor: *See—*
Csuros, Zoltan; Petro, Jozsef; Tungler, Antal; Mathe, Tibor; and Bekassy, Sandor, 3,691,103.
Bekhtle, Georgy Alexandrovich; Myasnikov, Nikolai Fedorovich; Mitrofanov, Jury Eremeevich; Berestov, Evgeny Stepanovich; Kauvasinsky, Albert Frantsevich; Leibson, Mark Lazarevich; and Derkach, Viktor Gershovich; deceased (by Galina, Nisonovna Budnitskaya; dministrator). Method and apparatus for magnetic concentration with ferromagnetic soft iron bodies. 3,690,454, Cl. 209-38.000.
Bell & Howell Company: *See—*
Taillon, John Kellner, 3,690,750.
Bell, Stanley C.: *See—*
McCaully, Ronald J.; and Bell, Stanley C., 3,691,235.
Bell Telephone Laboratories, Incorporated: *See—*
Angner, Ronald Joseph; and Koscinski, Anthony, 3,691,308.
Bergh, Arpad Albert; Paola, Carl Ralph; and Saul, Robert H., 3,690,965.
Borsuk, Michael Howard; and Browne, Paul Nolan, 3,691,486.
DeLange, Owen Edward, 3,691,387.
Fenton, Francis Michael, 3,691,310.
Grandle, James Arthur, Jr., 3,691,320.
Hayashi, Izjo, 3,691,476.
King, Michael Charles, 3,690,881.
Patel, Chandra Kumar Naranbhai, 3,691,388.
Pinnow, Douglas Arthur; and Van Uitert, Le Grand Gerard, 3,691,482.
Rupp, Louis William, Jr.; and Walsh, Walter Michael, Jr., 3,691,453.
Saul, Robert H., 3,690,964.
Zarouni, Alfred, 3,691,301.
Belleau, Bernard R.; and Kavadias, Gerry, to Bristol-Myers Company. Process for the preparation of 1-indancarboxylic acids. 3,691,231, Cl. 260-523.00r.
Bellon Plumbing Company, Incorporated: *See—*
Montesdioca, Renaldo, 3,690,609.
Bender, Stanley O.; and Di Girolama, to CTS Corporation. Resistors and stacked plurality thereof. 3,691,506, Cl. 338-317.000.
Bendix Corporation, The: *See—*
Michaud, Jimmie A., 3,691,353.
Millman, William V., 3,690,317.
Seppey, Robert E., 3,690,157.
Somer, Toivo A., 3,691,382.
Benghiat, Isaac, to Universal Oil Products Company. Diesters of halo-substituted alkylphosphonates. 3,691,275, Cl. 260-961.000.
Bennett, William Coffey; and Stastny, Edwin O., to Nouar Corporation. Coaxial tape cartridge. 3,690,590, Cl. 242-194.000.
Benoit, Yvonne R.: *See—*
Baxter, Frederick J.; and Benoit, Yvonne R., 3,690,277.
Berestov, Evgeny Stepanovich: *See—*
Bekhtle, Georgy Alexandrovich; Myasnikov, Nikolai Fedorovich; Mitrofanov, Jury Eremeevich; Berestov, Evgeny Stepanovich; Kauvasinsky, Albert Frantsevich; Leibson, Mark Lazarevich; and Derkach, Viktor Gershovich, 3,690,454.
Berg, Bengt Henrik: *See—*
Edstrom, John Olof; Innerman, Sven Eric; Berg, Bengt Henrik; and Mills, Brian Edward, 3,690,850.
Bergh, Arpad Albert; Paola, Carl Ralph; and Saul, Robert H., to Bell Telephone Laboratories, Incorporated. Semiconductor epitaxial growth from solution. 3,690,965, Cl. 148-172.000.
Berghezan, Aurel I., to Cabot Corporation, mesne. Method for producing composite article. 3,690,961, Cl. 148-11.50f.
Bergstrom, Sune; and Sjovall, Jan. PGE2 methyl ester and PGE2 methyl ester diacetate. 3,691,216, Cl. 260-408.00r.
Berlin, Aaron S.; Little, Vincent C.; and Leadore, Toney, to United States of America, Army. Primer retainer bushing. 3,690,258, Cl. 102-70.00r.
Bernardin, Leo J., to Kimberly-Clark Corporation. Absorbent fibers of phosphorylated cellulose with ion exchange properties. 3,691,154, Cl. 260-219.000.
Berthold, Walter: *See—*
Spiller, Richard; Moser, Gottfried; and Berthold, Walter, 3,690,395.
Bertlini, Natale: *See—*

Calcagno, Benedetio; Ghirga, Marcello; and Bertlini, Natale, 3,691,098.

Bertoglio, Guido, to S.A. Albe. Machine for the high speed, extremely precise mass working of pieces having small dimensions and complex forms, in particular of metallic small articles. 3,689,965, Cl. 29-38.00c.

Bertrand, Richard R.: *See—*
Weyrich, Arthur G.; Bertrand, Richard R.; and Karinski, Edwin D., 3,691,425.

Besant, Robert W.: *See—*
McKinnon, Murdoch G.; Wilson, James N.; and Besant, Robert W., 3,690,339.

Beshtee International Corporation: *See—*
Wasp, Edward J., 3,690,732.

Bestt Rollr, Inc.: *See—*
Ellis, Donald A., 3,690,779.

Biechele, Dallas J., Jr. Processing carp for human consumption. 3,690,899, Cl. 99-111.000.

Biederman, Stuart J.; and Jezewski, Walter E. Air operated terminal feed device. 3,689,984, Cl. 29-203.00s.

Biesecker, Douglas A.: *See—*
Lewis, Donald E.; and Biesecker, Douglas A., 3,690,616.

Biesinger, Erwin. Apparatus for continuously treating textile material. 3,690,128, Cl. 68-20.000.

Biethan, Uwe: *See—*
Riemhofer, Franz; Dittmann, Walter; Biethan, Uwe; Hornung, Karl-Heinz; and Schutze, Ernst-Christian, 3,691,258.

Bigelow-Sanford, Inc.: *See—*
Norris, Alan H., 3,690,057.
Peters, Robert I., 3,690,056.

Bihler, Otto, to Bihler, Otto, KG. Feeding apparatus for wire and like elongated material. 3,690,533, Cl. 226-165.000.

Bihler, Otto, KG: *See—*
Bihler, Otto, 3,690,533.

Biller, Efim; Huettner, Rudolf; and Velling, Gunter, to Union Rheinische Braunkohlen Kraftstoff Aktiengesellschaft. Process for the treating crude alkylated phenols. 3,691,238, Cl. 260-621.00a.

Billings, William G., to Phillips Petroleum Company. Selectively removing monoalkylbenzenes from mixtures thereof with dialkylbenzenes. 3,691,247, Cl. 260-674.00a.

Billingsley, James D., to LTV Aerospace Corporation. Photographing means. 3,690,233, Cl. 95-11.000.

Billmann, Gerhard Leonhard Emil, to Bunker-Ramo Corporation, The. Plug connection contact with high security against burning off. 3,691,511, Cl. 339-111.000.

Bilton, John, to Fluidrive Engineering Company Limited. Geared drives incorporating fluid couplings. 3,690,196, Cl. 74-730.000.

Bio Data, Inc.: *See—*
Collins, Ronald J., 3,690,404.

Bio-Cal Instrument Company: *See—*
Endl, Alfons, 3,690,772.

Bird, J. Vincent. Method of making powdered silicone rubber. 3,691,128, Cl. 260-34.200.

Biron, Jules N. Cable handling system. 3,690,534, Cl. 226-172.000.

Bischoff, Leo E.: *See—*
Hammer, Dale F.; and Bischoff, Leo E., 3,691,443.

Bjelland, John Louis; Flynn, Floyd W.; and Schutt, Norman C., to Powers Chemco, Inc. Vacuum actuated rotary drill. 3,690,780, Cl. 408-58.000.

Black and Decker Manufacturing Company, The: *See—*
Wood, John W., 3,690,051.

Blaimschein, Gottfried, to GFM Gesellschaft fur Fertigungstechnik and Maschinenbau Aktiengesellschaft. Swaging machine for a continuous swaging of rod-shaped workpieces. 3,690,142, Cl. 72-402.000.

Blair, Charles M., Jr., to Magna Corporation. Method of controlling aquatic weeds, and other undesired forms of aquatic life, without adversely affecting fish. 3,690,857, Cl. 71-66.000.

Blair, Gerald E.: *See—*
Greco, Edgar J.; Blair, Gerald E.; and Rindone, Guy E., 3,690,908.

Blandin Paper Company: *See—*
Dentch, Milton P.; Jodrey, Robert M.; Gucstella, Samuel L.; and Larrivee, Jerry J., 3,690,297.

Blandy, William. Impregnated corrugated board. 3,691,002, Cl. 161-137.000.

Blatter, Herbert Morton: *See—*
Lucas, Robert Armistead; and Blatter, Herbert Morton, 3,691,179.

Blatter, Herbert Morton; and Lucas, Robert Armistead, to Ciba Corporation. Cycloalkano [c] pyrazoles. 3,691,180, Cl. 260-295.500.

Blavo, Nicholas, to Westinghouse Electric Corporation. Helitran winding for electrical inductive apparatus. 3,691,496, Cl. 336-150.000.

Bliss, Joseph A.: *See—*
Hancock, James L.; and Bliss, Joseph A., 3,691,415.

Bloedel, MacMillan Limited: *See—*
Worster, Hans Edmund; and Pudek, Marian Franciszek, 3,691,008.

Bloice, John Anthony, to Memco (Electronics) Limited. Detection of movement in confined spaces. 3,691,556, Cl. 343-5.0pd.

Bloom, Stanley M.; and Garcia, Paulina P., to Polaroid Corporation. Novel dipyrrylmethene dyes. 3,691,161, Cl. 260-240.700.

Blumbergs, John H.; and Menicks, Paul R., to FMC Corporation. Sodium maleate peroxyhydrate. 3,691,139, Cl. 2-78.40r.

Bnaks, Willard K.; and Lyon, James L., to International Business Machines Corporation. Electrostatic printing system. 3,690,760, Cl. 355-16.000.

Boatwright, John T., to Northeast Electronics Corporation. Voltage ratio apparatus with logarithmic output. 3,691,473, Cl. 328-145.000.

Bocalo, Louis. Termal actuator and method of making. 3,690,065, Cl. 60-23.000.

Bock, Elmer E., to Textile Machinery Company, Inc. Creel. 3,690,586, Cl. 242-131.000.

Bodenseewerk Geratetechnik: *See—*
Buchholz, Hans-Dieter; and Reerink, Hans-Peter, 3,690,598.

Boehringer Ingelheim G.m.b.H.: *See—*
Ohnacker, Gerhard; Daniel, Helmut; and Machleidt, Hans, 3,691,173.

Boekhorst, Antonius; Janssen, Peter Johannes Hubertus; and Wolber, Jorg, to U.S. Philips Corporation. Circuit arrangement for generating a sawtooth current in a line deflection coil for a display tube conveying a beam current and for generating an Eht. 3,91,422, Cl. 315-19.000.

Bofinger, Karl; and Hake, Walter Thomas, to American Can Company. Apparatus for securing strip members to container bodies. 3,690,997, Cl. 156-567.000.

Bogenberger, Richard; Helmcke, Conrad; and Kritikos, Athanasios, to Messerschmitt-Bolkow-Blohm GmbH. Electrochemical data storage with electron beam accessing. 3,691,533, Cl. 340-173.0ch.

Bognar, Bela, to TRW Inc. Non-snap acting rocker switch. 3,691,325, Cl. 200-66.000.

Bogusz, Frank J. Door guard. 3,690,709, Cl. 292-262.000.

Bohanski, John S. Hand propelled vehicles. 3,690,697, Cl. 280-247.000.

Bohlmann, Willy Frank, Jr.: *See—*
Pattison, Martin Oren; and Bohlmann, Willy Frank, Jr., 3,690,112.

Bohman, Erik Harald, to Telefonaktiebolaget LM Ericsson. Arrangement for the generation of pulses appearing as pseudo-random numbers. 3,691,472, Cl. 328-63.000.

Boik, Arnold R.; and Holk, Albert J., Jr. Single operation rivet. 3,690,706, Cl. 287-20.300.

Boise Cascade Corporation: *See—*
Bokovoy, Ronald D.; and Luvisotto, Roy G., 3,690,399.

Bojyo, Takuro; and Yamashita, Katsuyuki, to Victor Company of Japan Limited. Tape end detection device for tape recorder. 3,690,589, Cl. 242-191.000.

Bokovoy, Ronald D.; and Luvisotto, Roy G., to Boise Cascade Corporation. Axle assembly for an automotive vehicle. 3,690,399, Cl. 180-75.000.

Bolhofer, William A.; and Baldwin, John J., to Merck & Co., Inc. Substituted quinoxalines. 3,691,166, Cl. 260-250.00r.

Bolkow Gesellschaft mit beschrankter Haftung: *See—*
Dederra, Carl-Helmut; and Butter, Karl, 3,690,103.

Bolton, Benjamin A.: *See—*
Serres, Carl, Jr.; and Bolton, Benjamin A., 3,691,136.

Bonnefond, Georges: *See—*
Lansaque, Rene; and Bonnefond, Georges, 3,690,684.

Bonny, Jean-Pierre, to Portescap, Le. Porte-Echappement Universal S.A. Piezoelectric microphone. 3,690,144, Cl. 73-6.000.

Boosen, Karl-Josef, to Lonza Ltd. Process for making 2-hydroxyquinoline-4-carboxylic acids. 3,691,171, Cl. 260-287.00r.

Boren, Morris G.: *See—*
Amadon, Roger M.; and Boren, Morris G., 3,690,895.

Boresta, John G., to Chemical Construction Corporation. Adjustable venturi gas scrubber. 3,690,044, Cl. 55-223.000.

Borjeson, Jan Lennart, to Aktiebolaget Bofors. Target simulator for an optical sight. 3,691,284, Cl. 35-10.200.

Borneman, Lawrence A. Electric arc welding gun having a nozzle with a removable metal liner to protect the nozzle from weld splatter. 3,690,567, Cl. 239-591.000.

Borsuk, Michael Howard; and Browne, Paul Nolan, to Bell Telephone Laboratories, Incorporated. Modified time domain comb filters. 3,691,486, Cl. 333-70.00t.

Borsvold, Herbert H., to Goodrich, B. F., Company, The. Apparatus for vulcanizing elastomeric hose. 3,690,796, Cl. 425-90.000.

Bos, Hendrikus J.: *See—*
Van de Belo, Roelof; Begemann, Heinrich K. S. P.; Bos, Hendrikus J.; and Mann, Adriaan B., 3,690,389.

Bosch, Robert, G.m.b.H.: *See—*
Beesch, Otto, 3,691,418.
Klett, Erich; Paule, Kurt; and Hettich, Alfred, 3,691,407.
Krauss, Rudolf; and Walch, Eugen, 3,690,566.
Nier, Johannes, 3,689,985.
Widmaier, Dieter, 3,690,097.

Bosisto, Carlos Alberto: *See—*
Lozano, Gustavo Jimenz; Bosisto, Carlos Alberto; and Weinbaum Alejan Dro Sise, 3,690,006.

Bossert, Friedrich; and Vater, Wulf, to Farbenfabriken Bayer Aktiengesellschaft. Cyanophenyl-1α,4-dihydropyridine derivatives. 3,691,177, Cl. 260-294.900.

Boughton, Lowell D.: *See—*
Tregembo, Rhoderic; Dolezal, Wayne R.; Boughton, Lowell D.; and Stewart, John D., 3,690,106.

Bouligny, R. H., Inc.: *See—*
Dixon, William Jennings, 3,690,387.

Boulva, Paul. Marble game device with removable inserts. 3,690,663, Cl. 273-110.000.

Bourns, Inc., mesne: *See—*
Gorsuch, Reynolds G., 3,690,318.

Boussely, Jean, to Societe Sapchim-Fournier-Cimag. Glyceryl trimontanate. 3,691,219, Cl. 260-410.700.

Bouthors, Pierre; and Quemerais, Philippe, to Regie Nationale des Usines Renault and Automobiles Peugeot. Transmission mechanisms for automobiles and other vehicles. 3,690,192, Cl. 74-199.000.
Bowen Tools, Inc.: *See—*
Slator, Damon T.; and Wilson, Archie R., 3,690,136.
Slator, Damon T.; and Peil, Archie W., 3,690,381.
Bown, Delos E.; Neureiter, Norman P.; Schutze, Henry G.; and Williams, Herschelic, to Esso Research and Engineering Company, mesne. Stabilizer system. 3,691,132, Cl. 260-45.850.
Boyd, John A. Chute sanitizer and fire extinguisher. 3,690,560, Cl. 239-195.000.
Boyne, Ivor Fenwick, to G K N Windsor Limited. Twin screw extrusion presses. 3,690,623, Cl. 259-192.000.
Boysen, Gerd C.; and Hannula, Raymond H., to Allen-Bradley Company. Coil plate assembly. 3,691,493, Cl. 336-65.000.
Bradbury, Keith Douglas. Apparatus for pulling out row crop plants. 3,690,382, Cl. 171-56.000.
Brandon, William D.; and Drais, Jack A., to Caterpillar Tractor Company. Helically wound laminated bearings and method of manufacture. 3,690,639, Cl. 267-57.100.
Brantingson, Sigurd, to Brin Manufacturing Co., Inc. Multiple circuit switch with pivoted contact, only one switch operable at a time. 3,691,324, Cl. 200-5.00e.
Braun, Richard H.: *See—*
Vass, Edward J.; Braun, Richard H.; and Platt, Conrad R., 3,690,255.
Bredzs, Nikolajs; and Miller, Forbes M., to Wall Colmonoy Corporation. Cermet-type alloy. 3,690,849, Cl. 29-182.5.
Bredzs, Nikolajs; and Miller, Forbes M., to Wall Colmonoy Corporation. Method of making a cermet-type alloy. 3,690,875, Cl. 75-202.000.
Bremner, David F.; and Smith, Stephen B., to National Cash Register Company, The. Compact label printer. 3,690,250, Cl. 101-95.000.
Brennan, Francis P. Edge conditioning mechanism. 3,690,139, Cl. 72-199.000.
Breuer, Hubert, to Uniroyal Englebert Deutschland AG. Apparatus for pressing the seams or splices of raw tires. 3,690,992, Cl. 156-412.000.
Bridger, William: *See—*
Derderian, Edward J.; and Bridger, William, 3,690,224.
Briggs, Walton E., to Norton Company. Leak detector. 3,690,151, Cl. 73-40.700.
Brimhall, Ray S.; deceased (by Walker Bank and Trust Co.; administrator). Retorting apparatus with hood-shaped unitary coolant jacket disposed over screw conveyor. 3,691,019, Cl. 202-118.000.
Brin Manufacturing Co., Inc.: *See—*
Brantingson, Sigurd, 3,691,324.
Brinckman, Eric Maria: *See—*
Van Den Heuvel, Walter August; Vanhalst, Johan Eugeen; and Brinckman, Eric Maria, 3,690,886.
Brinning, Earl E., to Burroughs Corporation. Document reading apparatus. 3,691,352, Cl. 235-61.11c.
Brint, Norman Trevor, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defense in Her Britannic Majesty's Government of the. Cartridge clips. 3,690,217, Cl. 89-34.000.
Brint, Norman Treyor, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defense in Her Britannic Majesty's Government of the. Loading mechanisms for guns. 3,690,216, Cl. 89-33.00a.
Brisard, Gerard, to Etablissement Muller & Cie. Vehicle suspension testing apparatus. 3,690,145, Cl. 73-11.000.
Bristol-Myers Company: *See—*
Belleau, Bernard R.; and Kavadias, Gerry, 3,691,231.
British Drug Houses Limited, The: *See—*
Feather, Peter; and Brugess, Colin Michael, 3,691,212.
British Petrolcum Company Limited, The: *See—*
Carruthers, John; Knight, Warren Nevin Norton; and Dodwell, Christopher Henry, 3,691,066.
British Railways Board: *See—*
Hobbs, Anthony Edward Walter, 3,690,271.
Bromer, Heinz; Meinert, Norbert; Wetzlar, Johann Spincic; and Staaden, Hans, to Leitz, Ernst, G.m.b.H. Optical glass having anomalous partial dispersion. 3,690,905, Cl. 106-47.00q.
Brookhyser, Byron B., to Weyerhaeuser Company. Automatic sheet stacker. 3,690,649, Cl. 271-68.000.
Brothers, Doris Le Roy: *See—*
Kircher, Charles E., Jr.; McAlister, Donald R.; and Brothers, Doris Le Roy, 3,691,240.
Browatzki, Kurt: *See—*
Herzhoff, Peter; Platz, Stephan; Gref, Hans; Schwenger, Willi; Maus, Fritz; Schweicher, Wolfgang; Koepke, Gunther; Wasser, Willi; and Browatzki, Kurt, 3,690,917.
Brown, Bernard Bean; and Ruopp, Donald Carl, to CPC International Inc. Synthesis of 1-substituted-3-halopyrrolidines. 3,691,198, Cl. 260-326.800.
Brown, Bernard Beau; and Swidinsky, John. Preparation of 1-substituted-3-chloropyrrolidines. 3,691,197, Cl. 260-326.800.
Brown, Boveri & Cie Aktiengesellschaft: *See—*
Knirsch, Gunther; and Schmitt, Herrmann, 3,691,489.
Brown, George J.; and Ewing, Robert J., to Worthington Biochemical Corporation. Means and method for chemical analysis. 3,691,017, Cl. 195-103.50r.
Brown, Gordon T.: *See—*
James, Barry A. J.; and Brown, Gordon T., 3,690,868.
Brown, Kenneth L.: *See—*
Landis, George G.; Parks, John M.; and Brown, Kenneth L., 3,691,340.
Brown, Richard H., to Pivot Punch Corporation. Composite plastic punch press stripper. 3,690,205, Cl. 83-139.000.
Brownbill, Thomas Duncan, to Dale, John, Limited. Taper-expanding mandrel. 3,690,141, Cl. 72-370.000.
Browne, Paul Nolan: *See—*
Borsuk, Michael Howard; and Browne, Paul Nolan, 3,691,486.
Bruass, Albert, to Spider Staging, Inc. Level winding winch mechanism and heavy-duty drive therefor. 3,690,409, Cl. 182-142.000.
Brucker, Henry J.: *See—*
Klausmann, Milton H.; and Brucker, Henry J., 3,690,223.
Bruder, John F., to Quadri Corporation. Read only memory. 3,691,541, Cl. 340-174.0sp.
Brugess, Colin Michael: *See—*
Feather, Peter; and Brugess, Colin Michael, 3,691,212.
Bruggeman, Frans; and Schmidt, Fernand, to N.V. Bekaert S.A. Cages for rearing animals. 3,690,301, Cl. 119-18.000.
Brumm, Richard S., to Grove Valve and Regulator Company. Silent flexible tube type valve. 3,690,344, Cl. 137-625.280.
Brummett, Paul L.; and Isley, Sigmund G., to Amerel Company Inc. Apparatus and method for conveying and sorting non-uniform articles and intra-factory system. 3,690,478, Cl. 214-16.40r.
Bruninghaus, Gisela: *See—*
Willich, Jean Herbert; and Bruninghaus, Walter, 3,690,425.
Bruninghaus, Walter: *See—*
Willich, Jean Herbert; and Bruninghaus, Walter, 3,690,425.
Brunner, Josef: *See—*
Suter, Hans; Zutter, Hans; and Brunner, Josef, 3,691,196.
Brunner, Josef Alphons; deceased (by Brunner-Rohrer, Pia Beatrice; Brunner, Josef Moritz Hugo; and Brunner, Urs Viktov Hohann; legal heirs), to Spemog AG. Processing and mixing machine. 3,690,622, Cl. 259-169.000.
Brunner, Josef Moritz Hugo: *See—*
Brunner, Josef Alphons, 3,690,622.
Brunner, Robert H.: *See—*
Kraft, Paul; and Brunner, Robert H., 3,691,127.
Brunner, Urs Viktov Hohann: *See—*
Brunner, Josef Alphons, 3,690,622.
Brunner-Rohrer, Pia Beatrice: *See—*
Brunner, Josef Alphons, 3,690,622.
Brunswick Corporation: *See—*
Conklin, Robert M., 3,690,675.
Bruton, James Isaac: *See—*
Mago, Brij Mohan; and Bruton, James Isaac, 3,690,362.
Bruun, Jean Eskild: *See—*
Muhlemann, Ernst; and Bruun, Jean Eskild, 3,690,219.
Bryan, John, to Pilkington Brothers Limited. Welded double glazing units. 3,690,856, Cl. 65-287.000.
Brynjegard, Olaf G. Dodecahedron ornament. 3,690,998, Cl. 161-16.000.
Buchanan, Harry C., Jr.: *See—*
Fannin, Wayne V.; and Buchanan, Harry C., Jr., 3,690,689.
Buchel, Karl-Heinz; Regel, Erik; Grewe, Ferdinand; Scheinpflug, Hans; and Raspers, Helmut, to Farbenfabriken Bayer Aktiengesellschaft. N-Trityl-Imidazole. 3,691,192, Cl. 260-309.000.
Buchholz, Hans-Dieter; and Reerink, Hans-Peter, to Bodenseewerk Geratetechnik. Speed control for aircraft with extensible landing flaps. 3,690,598, Cl. 244-77.00d.
Buckley, Charles Harold; Mitchell, John; and Collier, Geoffrey Lionel, to Imperial Chemical Industries Limited. Chrome pigments. 3,690,906, Cl. 106-302.000.
Bucyrus-Erie Company: *See—*
Kraschnewski, Melvin W.; and Lesniewski, Gerald F., 3,690,483.
Bugaut, Andree; and Estradier, Francoise, to Societe Anonyme dite: L'Oreal. Benzomorpholine couplers and oxidation bases for dyeing live human hair. 3,690,810, Cl. 8-10.200.
Builders Sand Company: *See—*
Livingood, Harry Harlan, 3,690,183.
Buissiere, Jean; Colobert, Louis; and Montagnon, Paul A. F., to Promoveo. Device for use in the study of chemical and biological reactions and method of making same. 3,690,836, Cl. 23-253.0tp.
Buldini, Daniel A., to Polaroid Corporation. Nonsynchronous transfer apparatus. 3,690,433, Cl. 198-19.000.
Bullen, Ronald S., to Dresser Industries, Inc. Placement and detonation method for explosive fracturing. 3,690,379, Cl. 166-299.000.
Bunker-Ramo Corporation, The: *See—*
Billmann, Gerhard Leonhard Emil, 3,691,511.
Bunn, Dorrance P., Jr.; and Hack, Werner L. Steam distributor for fluid catalytic cracker stripper. 3,690,841, Cl. 23-288.00s.
Burch, Arthur R., to Clark Equipment Company. Station address and control system for material handling vehicles. 3,691,398, Cl. 307-116.000.
Burchell, Wesley. Variable pattern recorder. 3,690,011, Cl. 33-27.00j.
Burgess, James F.; and Neugebauer, Constantine A., to General Electric Company. High speed signal in MOS circuits by voltage variable capacitor. 3,691,537, Cl. 340-173.00r.
Burke, Oliver W., Jr. Elastomer-silica pigment masterbatches and production processes relating thereto. 3,691,129, Cl. 260-33.6ao.
Burkley, Thomas E., to Goodyear Tire & Rubber Company, The. Method of making a flexible member having increased service life. 3,691,268, Cl. 264-162.000.
Burroughs Corporation: *See—*

Beery, Jack, 3,691,397.
Brinning, Earl E., 3,691,352.
Calaway, Ward M., 3,691,474.
Looschen, Floyd W., 3,691,555.
Busby, Lloyd H. Combination ladder and hoist apparatus. 3,690,282, Cl. 114-43.500.
Busing, Walter; and Gebauer, Wolfgang, to Farbenfabriken Bayer Aktiengesellschaft. Apparatus for the noise-compensated measurement of high D. C. currents. 3,691,460, Cl. 324-126.000.
Bustos, Ray T.: *See—*
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Bustraan, Daniel J.; Gossie, Mijo A.; Sundstrom, Roy N.; and Wisner, William R. Article handling apparatus and method. 3,690,527, Cl. 225-4.000.
Butler, Cornelius, Jr. Reel trailer. 3,690,491, Cl. 214-506.000.
Butler, David B., to Kendall Company, The. Headrest with adhesive attachment. 3,691,005, Cl. 161-167.000.
Butler, Lloyd V. Water counterweight system for theatrical props and curtains. 3,690,617, Cl. 254-141.000.
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Butter, Karl: *See—*
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Butts, Earl E., to Clark Equipment Company. Mechanism for predicting food temperatures. 3,690,175, Cl. 73-343.00r.
Byland, Henry L., to Futuristic Building Products Inc. Door frame. 3,690,082, Cl. 52-213.000.
Byrd, Warnell M.: *See—*
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Cachat, John F., to Park-Ohio Industries, Inc. Multi-phase induction heating device. 3,691,339, Cl. 219-10.570.
CAE Industries Ltd.: *See—*
Kriellaars, Johannes Cornelius, 3,691,457.
Cahill, Thomas J., Jr., to Rapid-American Corporation. Bowling ball carrier. 3,690,360, Cl. 150-52.00a.
Calaway, Ward M., to Burroughs Corporation. Phase detector initializer for oscillator synchronization. 3,691,474, Cl. 331-1.00a.
Calcagno, Benedetio; Ghirga, Marcello; and Bertlini, Natale, to Societa Italiana Resine S.p.A. Process for manufacturing oxychlorination catalysts. 3,691,098, Cl. 252-441.000.
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Lovelock, James E., 3,690,835.
Calvagna, James F.; and Balling, Roger A., to Community Bank, mesne. Control system for audio-visual devices connected by calbes. 3,691,528, Cl. 340-152.00r.
Campbell, Ian Wallace. Apparatus and method for cable covering. 3,689,982, Cl. 29-430.000.
Canadian Cane Equipment, Ltd.: *See—*
Tilby, Sydney Edward, 3,690,358.
Canadian General Electric Company, Limited: *See—*
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Caporali, Giorgio; Ferlazzo, Natale; and Giordano, Nicola, to Montecatini Edison S.p.A. Process for the continuous production of olefinically unsaturated nitriles. 3,691,224, Cl. 260-465.300.
Carborundum Company, The: *See—*
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Carlisle, Dennis Richard; and Rolls-Royce Limited, to Fuel injector for a gas turbine engine. . 3,690,093, Cl. 60-39.74r.
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Carmack, Tim. Combination book mark and reading guide. 3,690,295, Cl. 116-119.000.
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Carruthers, John; Knight, Warren Nevin Norton; and Dodwell, Christopher Henry, to British Petroleum Company Limited, The. Hydrogenation of unsaturated gasolines. 3,691,066, Cl. 208-255.00r.
Cascade Corporation: *See—*
Farmer, Stanley E., 3,690,714.
Case, J. I., Company: *See—*
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Cassell, Robert D.: *See—*
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Cavanaugh, Robert E., Jr., to Packard Instrument Company, Inc. Data processing system employing quench simulation for enabling accurate computation of sample activity levels in liquid scintillation spectrometry. 3,691,386, Cl. 250-106.0sc.
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Chadenson, Pierre, to Societe Generale de Constructions Electriques et Mecaniques (Alsthom). Apparatus for statically measuring the average density of a liquid circulating in a pipeline. 3,690,184, Cl. 73-438.000.
Chafetz, Harry; Canning, William H.; and Morissette, Bertrand G., to Texaco Inc. Process for preparing hydrocarbon lubricating oil containing calcium alkylphenolate. 3,691,076, Cl. 252-42.700.
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Charle, Roger; Zviak, Charles; and Kalopissis, Gregoire, to Societe Anonyme dite: L'Oreal. . 3,691,270, Cl. Cosmetic makeup removing or t.
Charle, Roger; Zviak, Charles; and Kalopissis, Gregoire. Sanitary napkin having homogeneous distributed microcapsules filled with delay releasable bactercicidal and fungicidal deodorant. 3,691,271, Cl. 424-28.000.
Charles, Joseph T., to Coil Sales, Inc. Package for encapsulated electrical components. 3,691,294, Cl. 178-46.000.
Chartet, Andre, to Societe Anonyme des Usines Chausson. Method of fabricating and soldering stainless steel parts. 3,689,941, Cl. 29-157.30r.
Chase, Curtis A., Jr.; and Prats, Michael, to Shell Oil Company. Method for determining the reservoir properties of a formation. 3,690,167, Cl. 73-155.000.
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Chassang, Pierre Robert, to Lissmetal Lionel-Dupont. Presser belt for firmly engaging articles with a conveyor. 3,690,444, Cl. 198-165.000.
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Chemiebau, Dr. A. Zieren GmbH & Co., KG: *See—*
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Cheng, Tai Chun; and Halasa, Adel F. Method of producing T-alkylbenzene. 3,691,242, Cl. 260-668.00b.
Cherniak, Victor B. Concrete block setting form. 3,690,614, Cl. 249-90.000.
Chesler, Abraham. Circuit-closing adapter. 3,691,327, Cl. 200-42.00r.

Chevron Research Company: *See—*
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Chittenden, Richard Marion; Whitton, Alden William; Macalalad, Fidel Villaluna; Massman, Richard; and Wilson, Earl David, to Abbott Laboratories. Combined container and package particularly adapted for urinary drainage assemblies. 3,690,315, Cl. 128-275.00.
Chlystun, Walter K. Container with recloseable, collapsible pouring spout. 3,690,522, Cl. 222-529.000.
Chow, Ken-Tang; Stull, John William; and Bates, Charles Edward, to Electric Nuclear Laboratories, Inc. Composite light source. 3,691,390, Cl. 250-217.0ss.
Christensen, Alton O., to Shell Oil Company. Frequency divider circuit. 3,691,402, Cl. 307-225.00c.
Christensson, Od Wikar, to Christenssons Maskiner & Patentar Aktiebolag. Method for the production of a package, preferably for dry and frozen material. 3,690,091, Cl. 53-42.000.
Christenssons Maskiner & Patentar Aktiebolag: *See—*
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Chromy, Franz, to Hilti Aktiengesellschaft. Threaded joint type connection for a drill in a hammer drill. 3,690,390, Cl. 175-388.000.
Chupp, John P.: *See—*
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Ciba Corporation: *See—*
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Lucas, Robert Armistead; and Blatter, Herbert Morton, 3,691,179.
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McKay, Robert Bruce, 3,691,116.
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H oward, Donald Kearey; Thomas, Brian Martin; Popplewell, Alan Francis; and Matossi, Dario, 3,691,033.
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Sallmann, Alfred; and Pfister, Rudolf, 3,691,191.
Cicognani, Enrico; and Lyghounis, Evangelo, to Societe Italiana Telecomunicazioni Siemens S.p.A. Key modulated pulse-train generator for telecommunication system. 3,691,471, Cl. 328-6.00z.
Cincinnati Milacron Inc.: *See—*
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Cincinnati Mine Machinery Co., The: *See—*
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Claeys, Daniel Alois, to Gevaert-Agfa N.V. Protection of information in recording material. 3,690,983, Cl. 156-230.000.
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Clark, Gene E., to Nuclear-Chicago Corporation. Direct data storage system for scintillation camera. 3,691,545, Cl. 340-174.10g.
Clark, Raymond L.: *See—*
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Clarke, Michael Raymond; Osmond, Desmond Wilfrid John; and Waite, Frederick Andrew, to Imperial Chemical Industries Limited and Balm Paints Limited. Polymer dispersions. 3,691,123, Cl. 260-29.100.
Clarkson Industries, Inc.: *See—*
Lee, Wilfred J.; and Kaess, Frank R., 3,690,466.
Claycomb, Dean A. Fluid operated spring loaded jack lock assembly. 3,690,641, Cl. 269-20.000.
Clayton, Cyril Reginald. Toilet deodorising apparatus. 3,689,944, Cl. 4-213.000.
Clayton, Hadwen A., to Phillips Petroleum Company. Controlling pressure in fluid transfer conduits. 3,690,115, Cl. 62-49.000.
Clemencet, Roland Louis Julien: *See—*
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Cleveland, Charles M.; and Milianowicz, Stanislaw A., to Westinghouse Electric Corporation. Knife blade contact assembly with improved contact engagement position retaining means. 3,691,335, Cl. 200-162.000.
Cloud, Larry L.: *See—*
Kelly, Vincent J.; Smalligan, Wayne J.; and Cloud, Larry L., 3,690,894.
Coad, George: *See—*
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Cobbledick, David S., to General Tire & Rubber Company, The. Preparation of vinyl-coated polyurethane foams. 3,691,265, Cl. 264-45.000.
Coch, Lester, to Waldes Kohinoor, Inc. System for wet impact plating. 3,690,935, Cl. 117-109.000.
Cochrane, Robin Adam: *See—*
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Cole, Frank J.: *See—*
Roblin, John M.; Cole, Frank J.; and Reed, William A., 3,690,638.
Cole, Frank J., to Republic Steel Corporation. Apparatus and method for continuously condensing metal vapor upon a substrate. 3,690,933, Cl. 117-107.100.
Cole, John Wayne: *See—*
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Coleman Company, Inc., The: *See—*
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Compton, Robert G.; Richmond, Ray S.; and Tracy, Robert A., to First City National Bank of Houston, mesne as Trustee of the Callery, Francis A., 1968 Trust. Corona device. 3,691,373, Cl. 250-49.52c.
Conder International Limited: *See—*
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Conklin, Robert M., to Brunswick Corporation. Spin detector for golf games. 3,690,675, Cl. 273-185.00r.
Conley, James R.: *See—*
Worley, Lajren D.; and Conley, James R., 3,690,708.
Connell, James C.; Pinnolis, Samuel; and Schmidt, Wilhelm E. A., to Western Electric Company Incorporated. Apparatus for transferring components of a sealing contact switch to an assembly machine. 3,690,471, Cl. 214-1.0bt.
Connolly, Douglas P.; and Poehlein, Raymond E., to Xerox Corporation. Temperature sensing apparatus. 3,690,176, Cl. 73-351.000.
Consolidation Coal Company: *See—*
Gorin, Everett; and Yavorsky, Paul M., 3,690,818.
Gorin, Everett; and Yavorsky, Paul M., 3,690,824.
Constant, James Nickolas. System for identifying objects using an encoding array for each object. 3,691,557, Cl. 343-6.5ss.
Container Corporation of America: *See—*
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Continental Can Company Inc.: *See—*
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Lecinski, Frank H., Jr., 3,690,497.
Piazze, Thomas E., 3,690,545.
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Cooper, Clifford B., to General Dynamics Corporation. Rotating variable nose. 3,690,600, Cl. 244-120.000.
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Copley, Stephen M.; Giamei, Anthony F.; Hornbecker, Merton F.; and Kear, Bernard H., to United Aircraft Corporation. Casting single crystal articles. 3,690,368, Cl. 164-350.000.
Cornelis, Johannes: *See—*
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Corradini, Giorgio; Ghetti, Giuseppe; Cesca, Sebastiano; and Arrighetti, Sergio, to Snam Progetti S.p.A. Crosslinked terpolymers obtained without sulfur and vulcanizing agents and method for preparing same. 3,691,141, Cl. 260-80.780.
Corrin, Myron L., to Phillips Petroleum Company. Pelleted carbon black containing surfactant. 3,691,071, Cl. 252-8.55d.
Coss, Richard E.; and Harper, Willard J., to Carborundum Company, The. Continuous treating apparatus. 3,690,068, Cl. 51-13.000.
Cossor, A. C., Limited: *See—*
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Costa, Allan A. Double dispensing applicator with twin reservoirs. 3,690,777, Cl. 401-17.000.
Costa, Frank. Golf ball tee. 3,690,676, Cl. 273-202.000.
Costianes, Peter J., to United States of America, Air Force. Apparatus for taking photographs at times of minimum image motion. 3,690,234, Cl. 95-11.000.
Coulson, Dale Robert, to Du Pont de Nemours, E. I., and Company. 2-Methyl-3-methylene-1,5,7-octatriene, its oligometer, and its preparation from allene and butadiene with palladium(O) catalysts. 3,691,250, Cl. 260-677.00r.
Coulson, Dale Robert, to Du Pont de Nemours, E. I., and Company. 2-Methyl-3-me thylene-1,5,7-octatriene, its oligometer, and its preparation from allene and butadiene with palladium(O) catalysts. 3,691,950, Cl. 260-677.00r.
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Covey, Rupert A.; von Schmeling, Bogislav; and Crittendon, Charles E., to Uniroyal, Inc. Method for killing meristematic buds. 3,690,861, Cl. 71-76.000.
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CPC International Inc.: *See—*
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Craine, Richard W.: *See—*
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Crane, Elmer Earl. Circular irrigation system with hydraulic drive. 3,690,343, Cl. 137-344.000.
Crapsey, Arthur H., Jr.: *See—*
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Crittendon, Charles E.: *See—*
Covey, Rupert A.; von Schmeling, Bogislav; and Crittendon, Charles E., 3,690,861.
Cross, Robert A., to Amicon Corporation. Dialysis membrane and its use. 3,691,068, Cl. 210-22.000.
Cruickshank, John S. Photo recording assembly. 3,690,242, Cl. 95-82.000.
Csuros, Zoltan; Petro, Jozsef; Tungler, Antal; Mathe, Tibor; and Bekassy, Sandor, to Mayyar Tudomanyos Akadenia. Process for the preparation of a nonpyrophoric nickel skeleton catalyst. 3,691,103, Cl. 252-473.000.
CTS Corporation: *See—*
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Cull, Neville L.: *See—*
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Cullison, Eugene Francis. Extension scaffold. 3,690,407, Cl. 182-119.000.
Curran, Bernard E.; Gartner, Rodney W.; and Lindner, Robert G., to Robertson, H. H., Company. Method of making an insulated building panel unit. 3,690,987, Cl. 156-257.000.
Curran, Michael G. Shock absorbing bumper. 3,690,710, Cl. 293-71.00r.
Curry, John J. Combined container and closure. 3,690,503, Cl. 220-39.00r.
Curtis, Lyda Darrell, to Rybeck, S. Arthur, Jr. Dental crown and bridge removing adaptor. 3,690,007, Cl. 32-43.000.
Cusano, Carmen M.; Yamamoto, Roy I.; and Rubin, Isaac D., to Texaco Inc. Graft copolymer with an alkyl acrylate and ethylthioethyl metharylate backbone. 3,691,261, Cl. 260-881.000.
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Huebner, Werner P. E.; and Long, Robert G., 3,691,305.
Dahl, Ernest A., Jr. Data storage system. 3,690,753, Cl. 353-23.000.
Dahl, Robert S. Cake package. 3,690,902, Cl. 99-172.000.
Dahle, Norman A., to Gulf Research & Development Company. Combating weeds and algae with 2-chloro-5-aryl-1,3,4-thiadiazoles. 3,690,858, Cl. 71-67.000.
Dahms, Ronald H.: *See—*
Anderson, George J.; and Dahms, Ronald H., 3,691,121.
Daimler-Benz Aktiengesellschaft: *See—*
Naumann, Fritz A., 3,690,193.
Dainippon Ink and Chemicals Incorporated: *See—*
Maeda, Hiroshi; Hasegawa, Koichi; Sekiguchi, Hisashi; and Hayakawa, Fumio, 3,691,228.
Dalan Company: *See—*
Hughes, David A.; and Hughes, Alan T., 3,690,656.
Dale, John, Limited: *See—*
Brownbill, Thomas Duncan, 3,690,141.
Dalgliesh, John D., Jr.; and Kisner, Clinton E. Building construction. 3,690,077, Cl. 52-79.000.
Damon Corporation: *See—*
Ferrari, Andres, 3,690,833.
Danfoss A/S: *See—*
Dyre, Mogens; and Abildtrup, Jorgen, 3,691,346.
Jensen, Arne; and Petersen, Tom Kastrup, 3,691,439.
Petersen, Alex, 3,690,792.
Daniel, Helmut: *See—*
Ohnacker, Gerhard; Daniel, Helmut; and Machleidt, Hans, 3,691,173.
Daniels, Floyd La Mar, to Anadite Incorporated. Apparatus for the restructuring of metals. 3,690,367, Cl. 164-335.000.
Daniels, Thaddeus E. Hand ergograph with marking stylus. 3,690,308, Cl. 128-2.00n.
Dantro, Horace F., to Knorr-Bremse GmbH. Photosensitive sub-pigmentary titanium dioxide produced by calcinating titanium hydrate from 725°C to 825°C. 3,690,887, Cl. 96-88.000.
Dave Chapman, Goldsmith & Yomasaki, Inc.: *See—*
Anderson, Douglas W.; and Chapman, Dave, 3,690,088.
Davenport, Francis Robert, to American Filtrona Corporation, mesne. Cigarette filter. 3,690,326, Cl. 131-10.500.
Davey, John E.; and Pankey, Titus, Jr., to United States of America, Navy. Method of forming gallium phosphide coatings. 3,690,915, Cl. 117-33.300.
David, Billy W., to Texas Instruments, Incorporated. Acoustic energy source utilizing the waterhammer phenomenon. 3,690,403, Cl. 181-5.000.
Davidson, Barry A.: *See—*
Weinstein, James D.; and Davidson, Barry A., 3,689,949.
Davidson, Eugene M. Axial flow fans. 3,689,971, Cl. 29-156.8cf.
Davidson, William J., to Electronic Controls Corporation. Permutation switch. 3,691,328, Cl. 200-43.000.
Davies, Dennis; and Kern, John P., to Digital Telephone Systems, Inc., mesne. Circuit usage analyzer. 3,691,303, Cl. 179-8.00a.
Davis, Gordon E. Automobile locking device. 3,690,131, Cl. 70-203.000.
Davis, Patrick J.: *See—*
Hendrickson, William W.; and Davis, Patrick J., 3,691,431.
Davis, Robert D., to Spectral Dynamics Corporation. Frequency band shifter. 3,691,394, Cl. 307-3.000.
Dawson, Peter H. V.; and Smith, Norman S. Heel moulding bands. 3,689,952, Cl. 12-14.400.
Day, Christopher C., to American Optical Corporation. Self calibrating tidal volume impedance pneumograph. 3,690,143, Cl. 73-1.00r.
Dayton, David S.; and Girard, Alfred L., to Technical Communications Corporation. Asynchronous, swept frequency communication system. 3,691,464, Cl. 325-55.00.
De Bell, Lawrence R.; and Price, David D., Jr., said De Bell assor. to Economy Co. Method for recording predetermined information duration within pre- set record length. 3,691,314, Cl. 179-109.20s.
De Carlo, Angelo N.; and De Carlo, Vito G. Catcher frame for harvester. 3,690,054, Cl. 56-330.000.
De Carlo, Vito G.: *See—*
De Carlo, Angelo N.; and De Carlo, Vito G., 3,690,054.
De Filippis, Tullio: *See—*

Graham, Walton; Melnick, Irving E.; and De Filippis, Tullio, 3,691,516.

De Young, Edwin L., to Universal Oil Products Company. Dimerization of diolefinic compounds. 3,691,249, Cl. 260-677.00r.

Deakin, Gordon Asquith; Eastwood, Alan; and Vinnucimbe, Gordon. Transfer mechanism. 3,690,204, Cl. 83-112.000.

Deaton, James M., to Vendmart, Inc. Conveying rod for vending machines. 3,690,510, Cl. 221-75.000.

Decker, John J.; and Kerstetter, Donald R., to GTE Sylvania Incorporated. Doubled layer heater coating for electron discharge device. 3,691,421, Cl. 313-345.000.

Decker, Robert W.; and Mole, Robert F., to Agricultural Specialty Co., Inc. Article transfer apparatus. 3,690,468, Cl. 212-84.000.

Dederra, Carl-Helmut; and Butter, Karl, to Bolkow Gesellschaft mit beschrankter Haftung. Structural element construction and method of manufacturing. 3,690,103, Cl. 60-267.000.

Deere & Company: *See—*
Whisler, Edwin Lee, 3,690,720.

Degginger, Edward R., to Allied Chemical Corporation. Dust suppressing during mining process. 3,690,727, Cl. 299-12.000.

DeJur-Amsco Corporation: *See—*
Kotler, Max; and Ravese, Frank E., 3,690,746.

Delair, Jean-Paul; and Raisin, Jean-Pierre, to Institut Textile de France. Device for the automatic measurement of the length of yarn consumed in knitting machines. 3,690,123, Cl. 66-1.00r.

DeLange, Owen Edward, to Bell Telephone Laboratories, Incorporated. Error-correcting optical PCM detector. 3,691,387, Cl. 250-199.000.

Dell, Harold R.; and Lara, Edwardo D., to Singer-General Precision, Inc. Asynchronous binary multiplier employing carry-save addition. 3,691,359, Cl. 235-164.000.

Della Bella, Davide; Portelli, Mario; and Renzi, Giorgio, to Zambon S.p.A. Process for the preparation of thiamphenicol glycinate acetyclsteinate. 3,691,229, Cl. 260-481.00r.

Dellian, Kurt A., to Ciba-Geigy Corporation. Dyeing assisted by aryl esters of aryl sulfonic acids. 3,690,815, Cl. 8-173.000.

Demag Aktiengesellschaft: *See—*
Weber, Hans, 3,690,138.

Dembny, Kenneth D.: *See—*
Frederick, Charles D.; Dembny, Kenneth D.; and Thomson, Meredith C., 3,690,002.

Demozay, Daniel: *See—*
Ducret, Jacques; Pillon, Daniel; and Demozay, Daniel, 3,691,282.

Deniega, Castillo: *See—*
Tellerman, Edward M.; and Deniega, Castillo, 3,690,127.

Denki Kagaku Kogyo Kabushiki Kaisha: *See—*
Kadowaki, Takashi; Iwasaki, Takao; Mitsuta, Yutaka; and Shimada, Kenji, 3,691,143.

Denki Onkyo Company, Limited: *See—*
Kawada, Takehiko, 3,691,410.

Dennison Manufacturing Company: *See—*
Setzer, Henry J., 3,690,999.

Dentch, Milton P.; Jodrey, Robert M.; Gucstella, Samuel L.; and Larrivee, Jerry J., to Blandin Paper Company. Non-aqueous coating of webs. 3,690,297, Cl. 118-410.000.

Denton, Ronald T., to Ford Motor Company. Liquid level gage. 3,690,174, Cl. 73-323.000.

Dentsply Research & Development Corporation: *See—*
Schwartz, Carl H., 3,690,366.

Derderian, Edward J.; and Bridger, William. Machine for erecting lined containers. 3,690,224, Cl. 93-36.010.

Derkach, Viktor Gershovich: *See—*
Bekhtle, Georgy Alexandrovich; Myasnikov, Nikolai Fedorovich; Mitrofanov, Jury Eremeevich; Berestov, Evgeny Stepanovich; Kauvasinsky, Albert Frantsevich; Leibson, Mark Lazarevich; and Derkach, Viktor Gershovich, 3,690,454.

Derossi, Piero. Device for standing projection of single photograms in a cynematographic projector. 3,690,752, Cl. 352-174.000.

Derr, M. Arthur, Jr. Anti-sway device for trailer hitches. 3,690,699, Cl. 280-446.00b.

Desbrandes, Robert: *See—*
Gabillard, Robert; Louage, Francois; and Desbrandes, Robert, 3,690,164.

Det Norske Zinkkompani A/S: *See—*
Von Roepenack, Adolf; Wuethrich, Hans; and Schmidt, Wilhelm, 3,691,038.

Detrex Chemical Industries, Inc.: *See—*
Kircher, Charles E., Jr.; McAlister, Donald R.; and Brothers, Doris Le Roy, 3,691,240.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Janzon, Karl-Heinz; Simon, Eugen Meyer; and Schwab, Heinrich, 3,691,089.

Devices Limited: *See—*
Kenny, John, 3,690,325.

Devillas, Jean-Luc: *See—*
Mahe, Yves; Letourneur, Gilbert; and Devillas, Jean-Luc, 3,690,910.

Devitt, Gordon Marvin: *See—*
Devitt, Lloyd Raymond; and Devitt, Gordon Marvin, 3,690,418.

Devitt, Lloyd Raymond; and Devitt, Gordon Marvin. Enclosed automatic slack adjuster for vehicle shoe brakes. 3,690,418, Cl. 188-79.50k.

Devlieg Machine Company: *See—*
Jerue, Richard A., 3,689,988.

Di Frank, Frank J.; and Maze, Glenn W., to Owens-Illinois, Inc. Process for the manufacture of laminated article. 3,690,981, Cl. 156-210.000.

Di Girolama: *See—*
Bender, Stanley O.; and Di Girolama, 3,691,506.

Di Martino, Renato. Vertical take-off landing aircraft having a pair of coaxial counter-rotating rotors, each formed by a set of revolvable blades radially jutting from the body of the craft. 3,690,597, Cl. 244-23.000.

Diablo Systems, Inc.: *See—*
Gabor, Andrew, 3,691,542.

Diamond, Martin J.; and Needles, Howard L. Process of reacting hydrogen-donor fibrous substrate with polymers of acryloxyacyl chlorides and products produced thereby. 3,690,813, Cl. 8-115.500.

Dickopp, Gerhard: *See—*
Schuller, Eduard; Redlich, Horst; Dickopp, Gerhard; and Klemp, Hans-Joachim, 3,691,318.

Dickopp, Gerhard, to TED Bildplatten Aktiengesellschaft. Pressure responsive playback device for mechanically recorded signals. 3,691,317, Cl. 179-100.41p.

Diebold Incorporated: *See—*
Kettering, Dale O., 3,690,593.

Diebold, James L.: *See—*
Wolf, Milton; and Diebold, James L., 3,691,168.

Dieter, Robert L. Rotary engine with radially shiftable rotor. 3,690,791, Cl. 418-61.000.

Dieterich, Melvin L., to Standard Products Co., The. Recessed weather strip body. 3,690,038, Cl. 49-489.000.

Dietz, Victor J.: *See—*
Nooker, Eugene L.; Thompson, Luther G.; Varney, Glenn E.; and Dietz, Victor J., 3,690,257.

Digital Telephone Systems, Inc., mesne: *See—*
Davies, Dennis; and Kern, John P., 3,691,303.

Dillard, Paul A., to TRW Inc. Solar array with self-erecting, self-rigidizing roll-up sheets. 3,690,080, Cl. 52-108.000.

Dillon, Janus J., to Food Equipment Inc. Fowl processing system. 3,689,958, Cl. 17-11.000.

Director National Institute of Radiological Sciences, Science and Technology Agency: *See—*
Tanaka, Eiichi; Hiramoto, Toshiyuki; and Nohara, Norimasa, 3,691,379.

Dittmann, Walter: *See—*
Riemhofer, Franz; Dittmann, Walter; Biethan, Uwe; Hornung, Karl-Heinz; and Schutze, Ernst-Christian, 3,691,258.

Diversified Metals, Inc.: *See—*
Hall, Harry P., 3,690,490.

Dixon, William Jennings, to Bouligny, R. H., Inc. Boom rotation brake release means for derricks. 3,690,387, Cl. 173-43.000.

Documation Inc.: *See—*
Halbert, Silas Ray, 3,690,644.

Dodwell, Christopher Henry: *See—*
Carruthers, John; Knight, Warren Nevin Norton; and Dodwell, Christopher Henry, 3,691,066.

Doehel, Karl J.; and Francis, John E., to Ciba-Geigy Corporation. Intermediates for 3-hydrazino-1,2,8,9-tetraazaphenalenes. 3,691,165, Cl. 260-250.00a.

Dolezal, Richard, to Sulzer Brothers, Ltd. Forced circulating steam generator and method of generating. 3,690,303, Cl. 122-406.00s.

Dolezal, Wayne R.: *See—*
Tregembo, Rhoderic; Dolezal, Wayne R.; Boughton, Lowell D.; and Stewart, John D., 3,690,106.

Dolfing, Thale; and Lolkema, Jan, said Lolkema assor. to Scholten Honig Research N.V. Method of impeding the growth of plants on non-agricultural soils. 3,690,107, Cl. 61-36.00r.

Dolister, Harold H.: *See—*
Mosier, James A.; and Dolister, Harold H., 3,689,972.

Dollond and Aitchison Services Ltd.: *See—*
Eadon-Allen, Stuart, 3,690,547.

Dombay, Stephen, to Furniture Industry Research Association. Conditioning of wood to stabilise its colour. 3,690,922, Cl. 117-57.000.

Donche-Gay, Pierre, to American Engineering Company Limited. Reinforcing rod machine. 3,690,349, Cl. 140-63.000.

Donovan, Glenn R., to Smith, A. O., Corporation. Coil transfer apparatus. 3,689,976, Cl. 29-205.00d.

Dorall, Arthur G., to Kliklok Corporation. Method of combining a plurality of tub-shaped receptacles as a unitary package and package. 3,690,453, Cl. 206-65.00s.

Dore, Marcus John, to National Research Development Corporation. Electro-optical modulators. 3,691,484, Cl. 332-7.510.

Dorn, Conrad P., Jr.: *See—*
Shen, Tsung-Ying; Matzuk, Alexander R.; and Dorn, Conrad P., Jr., 3,691,193.

Doscher, Mary Ehlers, to American Cyanamid Company. Method for the control of helminths in warm-blooded animals using bis-N-phosphorylated compounds. 3,691,283, Cl. 424-204.000.

Doss, Richard C.; and Jones, Faber B., to Phillips Petroleum Company. Adhesive material for bonding vinyl chloride polymers to substrates. 3,690,936, Cl. 117-122.00h.

Douglas, Ormond S.; and Byrd, Warnell M. Chair arm support. 3,690,724, Cl. 297-194.000.

Dow Chemical Company, The: *See—*
Barron, Benny G., 3,691,124.
Glew, David N.; and Clarke, Ewart C., 3,690,829.
Grant, Charles H., 3,690,213.

Kottle, Sherman; Carl, William P.; and Vaughn, Walter L., 3,690,774.
Kroening, Roger D.; and Kirby, David B., 3,690,907.
Thomka, Laddie M., 3,690,903.
Tregembo, Rhoderic; Dolezal, Wayne R.; Boughton, Lowell D.; and Stewart, John D., 3,690,106.

Dow Corning Corporation: *See—*
Antonen, Robert C., 3,691,256.
Wendel, Samuel R., 3,691,222.

Dowley Manufacturing, Inc.: *See—*
Kelso, Robert E., 3,689,978.

Downer, John Colin: *See—*
Cole, Robert Templeman; Whitbread, Frederick John; and Downer, John Colin, 3,690,086.

Dowty Technical Developments Limited: *See—*
Spence, Peter, 3,690,789.

Doyle, Gerald: *See—*
Kroll, Wolfram R.; Doyle, Gerald; and Ruhle, Helmut W., 3,691,095.

Drais, Jack A.: *See—*
Brandon, William D.; and Drais, Jack A., 3,690,639.

Drake, Robert: *See—*
Harrison, Sol Esther; and Drake, Robert, 3,690,889.

Dresser Industries, Inc.: *See—*
Bullen, Ronald S., 3,690,379.
Ferrill, Homer E., 3,690,682.
Hopkinson, Eric C.; and Youmans, Arthur H., 3,691,378.

Drexler, Karl F.; and Gibbs, Edward E., to General Electric Company. Flexible support structure for end winding connections. 3,691,416, Cl. 310-260.000.

Dreyer, Allen E., to Universal Research Company. Puzzle. 3,690,672, Cl. 273-155.000.

Dreyer, Paul E. Sheet feed press for printing small size sheets on both sides simultaneously. 3,690,253, Cl. 101-217.000.

Drum, Edward W., to Ransburg Electro-Coating Corporation. Condition responsive valve. 3,690,336, Cl. 137-75.000.

Du Pont, Anthony A. Ejector ram jet engine. 3,690,102, Cl. 60-269.000.

Du Pont de Nemours, E. I., and Company: *See—*
Armstrong, William S., Jr.; Edwards, Webster H.; Laird, Joseph P.; and Vining, Roy H., 3,690,771.
Coulson, Dale Robert, 3,691,250.
Coulson, Dale Robert, 3,691,950.
Floria, Joseph Angelo, 3,691,092.
Frank, Herman J.; and Moch, Irving, Jr., 3,691,093.
Gerike, Peter, 3,690,863.
Halvorson, David O.; and Vines, Sterling N., 3,691,226.
Johnston, Thomas Emmett; and Sommers, Earl Eugene, 3,691,078.
Knowles, Richard N., 3,691,236.
Leverett, Glenn Frederick, 3,690,569.
Low, David N., 3,690,041.
McGinnis, Philip Roswell; and O'Brien, Gerald Joseph, 3,690,465.
Middleton, William J., 3,690,862.
Ott, Reuben C., 3,690,825.
Petersen, Robert E. A., 3,691,142.
Rennolds, Philip J., 3,690,302.
Walus, Aloysius N., 3,691,126.

Duchess Mfg. Corporation: *See—*
Pompeo, Louis, 3,690,064.

Ducret, Jacques; Pillon, Daniel; and Demozay, Daniel, to PEPRO, Societe pour le Developpement et la Vente de Specialties Chimiques. Method for destroying nematode. 3,691,282, Cl. 424-200.000.

Duhamel, Ronald E.: *See—*
Ferlise, Louis; and Duhamel, Ronald E., 3,690,245.

Dunbar, Oris G.: *See—*
Helms, Millard O.; and Dunbar, Oris G., 3,691,523.

Dunlap, Robert K.: *See—*
Vandermaas, Joseph K.; Rikard, Larry J.; Dunlap, Robert K.; and Lavender, James F., 3,690,942.

Dunlop Company Limited, The: *See—*
Harper, Samuel E., 3,690,294.

Dunlop Holdings Limited: *See—*
Morris, Raymond J. T., 3,690,925.

Duren, Lennart Axel: *See—*
Andersson, Arne Hilding; and Duren, Lennart Axel, 3,691,437.

Durran, Donald A.; and Platus, Daniel H., to United States of America, Air Force. Spin control system for reentry vehicle. 3,690,596, Cl. 244-3.210.

Durrwachter, Eugen; and Reichert, Otto, to Durrwachter, Eugen, Dr., DODUCO. Process for a continuous selective electroplating of strip. 3,691,026, Cl. 204-28.000.

Durrwachter, Eugen, Dr., DODUCO: *See—*
Durrwachter, Eugen; and Reichert, Otto, 3,691,026.

Duvall, Harvey H. Film cartridge. 3,690,582, Cl. 242-71.100.

Dykehouse, David B.; Okkonen, Oliver G.; and Zoodsma, Norman J., to Rowe International, Inc. Bill and coin changer. 3,690,332, Cl. 133-2.000.

Dynamics Corporation of America: *See—*
Swanke, Roy L.; Valbona, Bruno M.; and Samuelian, Maurice P., 3,689,999.

Dynamit Nobel Aktiengesellschaft: *See—*
Schreiner, Gunther; and Stoetzer, Ernst-Joachim, 3,690,970.
Vollkommer, Norbert; Ismail, Roshdy; and Moustafa, Troidorf, 3,691,138.

Dyre, Mogens; and Abildtrup, Jorgen, to Danfoss A/S. Electrically heated catalytic air purifier. 3,691,346, Cl. 219-374.000.

Eadon-Allen, Stuart, to Dollond and Aitchison Services Ltd. Calculating device. 3,690,547, Cl. 235-70.00r.

Earl, I. T. Desmond, to Textron Inc. Air cushion support space defining structure an stocksheet fabrication therefor. 3,690,401, Cl. 180-124.000.

East, Jerry L., to Simplimatic Engineering Co. High speed container draining apparatus. 3,690,486, Cl. 214-311.000.

Eastman Kodak Company: *See—*
Ainslie, Dianne B.; and Crapsey, Arthur H., Jr., 3,690,235.
Bacon, Robert Elwon; Perry, Ernest John; and Jones, Evan Thomas, 3,690,888.
Ettischer, Helmut, 3,690,236.
Fairbanks, Charles W.; and Rosecrants, William J., Jr., 3,690,892.
Gabrielsen, Rolf S.; and Olivares, Ismael A., 3,690,872.
Greco, Edgar J.; Blair, Gerald E.; and Rindone, Guy E., 3,690,908.
Kindig, Guilford Edwin, 3,690,239.
Miller, Warren J., 3,690,918.
Nerwin, Hubert, 3,690,238.
Nerwin, Hubert, 3,690,451.
Przezdziecki, Wojciech M., 3,690,882.
Rickard, Robert K.; and Klein, William C., 3,690,765.
Spence, John; Gilman, Paul Brewster, Jr.; and Ulbing, Cynthia Geer, 3,690,891.

Eastwood, Alan: *See—*
Deakin, Gordon Asquith; Eastwood, Alan; and Vinnucimbe, Gordon, 3,690,204.

Eaton Yale & Towne, Inc.: *See—*
Frost, Harold A.; and Simpson, Melvin R., 3,691,524.

Eberhardt, Ronald P.: *See—*
Lumney, Frank B.; and Eberhardt, Ronald P., 3,690,680.

Ebner, Craig E.; and Markley, Jeffry V., to Ametek, Inc. Variable reluctance transmitter. 3,691,546, Cl. 340-196.000.

Eccettuato, Vittorio: *See—*
Saltini, Fabrizio; and Eccettuato, Vittorio, 3,691,531.

Eckert, Hans; and Ehms, Uwe, to Grundig E.M.V. Elektro-Mechanische Versuchsanstalt Inhaber Max Grundig. Tension controlling means for magnetic tape or the like. 3,690,588, Cl. 242-189.000.

Ecom-Systems, Inc., mesne: *See—*
Abos, Ralph L., 3,690,565.

Economy Co.: *See—*
De Bell, Lawrence R.; and Price, David D., Jr. (said De Bell assor. to), 3,691,314.

Edelman, Alfred E. Tool for inserting dental implants. 3,690,005, Cl. 32-40.00r.

Edfors, John Eric; Romano, Domenic; and Quattrini, Victor, to Honeywell Information Systems, Inc. Computer package cabinet and module system. 3,691,432, Cl. 317-100.000.

Edick, Lee: *See—*
Hoard, Norman F.; and Edick, Lee, 3,691,558.

Edstrom, John Olof; Innerman, Sven Eric; Berg, Bengt Henrik; and Mills, Brian Edward, to Sandvikens Jernverks Aktiebolag. Zirconium alloy tube with zirconium hydride inclusions. 3,690,850, Cl. 29-183.000.

Edwards, Ralph W., to General Motors Corporation. Worm drive mechanism. 3,690,194, Cl. 74-427.000.

Edwards, Webster H.: *See—*
Armstrong, William S., Jr.; Edwards, Webster H.; Laird, Joseph P.; and Vining, Roy H., 3,690,771.

Ehenisteric Pelletier Enr.: *See—*
Pelletier, Marc, 3,690,481.

Ehms, Uwe: *See—*
Eckert, Hans; and Ehms, Uwe, 3,690,588.

Ehrenthal, Irving: *See—*
Katz, Edward; Ehrenthal, Irving; and Scallet, Barrett L., 3,690,948.

Eichler, Richard, to General Motors Corporation. Apparatus for measuring sound velocity in a workpiece. 3,690,155, Cl. 73-67.50r.

Electric Nuclear Laboratories, Inc.: *See—*
Chow, Ken-Tang; Stull, John William; and Bates, Charles Edward, 3,691,390.

Electronic Arrays, Inc.: *See—*
Glaser, Peter S., 3,691,429.

Electronic Controls Corporation: *See—*
Davidson, William J., 3,691,328.

Elischer, Julius W. Building board. 3,691,003, Cl. 161-159.000.

Ellett, Kenneth W.: *See—*
Gaiser, Edward J.; and Ellett, Kenneth W., 3,690,538.

Elliott, Phillip M., to Illinois Tool Works Inc. Alternate action mechanism. 3,691,333, Cl. 200-153.00j.

Ellis, Alan F.; and Seekircher, Richard, to Gulf Research & Development Company. Process for producing organic acids. 3,691,233, Cl. 260-533.00r.

Ellis, Donald A., to Bestt Rollr, Inc. Wipe-on paint applicator with pressurized feed. 3,690,779, Cl. 401-266.000.

Ellis, Ronald; and Wankling, James Leonard. Radiation detector comprising semi-conductor body incorporating a two-dimensional array of P-I-N-devices. 3,691,389, Cl. 250-211.00j.

Ellison, Edward F. Drifting anchor alarm. 3,690,285, Cl. 114-206.00f.

Ellmore, William A., to Ampex Corporation. Helical scan magnetic recorder having a critical angle for the tape at the entrance and exit guides in the head drum. 3,691,315, Cl. 179-100.200.

Elm Industry Co., Ltd.: *See—*
Tanigami, Satoshi, 3,690,531.

Elmore, Glenn V., to International Business Machines Corporation. Method for strongly adhering a metal film on ceramic substrates. 3,690,921, Cl. 117-54.000.

Eltro GmbH., Co.: *See—*
Menke, Joseph F., 3,690,594.

Eltzroth, Richard E.; and Fewell, Larry K., to General Motors Corporation. Method of bonding. 3,689,983, Cl. 29-470.100.

Emerson Electric Co.: *See—*
Thompson, Walter W., 3,690,365.

Emhart Corporation: *See—*
Tebo, Walter J., 3,690,202.

Emich, Gerald E.: *See—*
Herrington, Troy A.; and Emich, Gerald E., 3,689,959.

Endl, Alfons, to Bio-Cal Instrument Company. Photometer for carrying out measurements at different wave lengths. 3,690,772, Cl. 356-179.000.

Endo, Hiroshi: *See—*
Umeda, Kaoru; Ishii, Kenjiro; and Endo, Hiroshi, 3,690,532.

Endo, Hiroshi; Tokoyoda, Kazuo; Fujiyu, Takemi; Kayasuga, Yasuaki; and Kunii, Tokio, to Suehiro Sen-I Kogyo Kabushiki Kaisha. Process for preparing synthetic suede sheets. 3,690,911, Cl. 117-17.000.

Engelhard Minerals & Chemicals Corporation: *See—*
Langley, Robert C., 3,691,052.

Engelhorn, Robert: *See—*
Schmidt, Gunther; Engelhorn, Robert; and Leitold, Mats, 3,691,159.

Englander, Irving G.: *See—*
Missio, Danilo V.; Wollman, Herbert; and Englander, Irving G., 3,690,767.

Engstrom, George L. Lock plug shell. 3,690,132, Cl. 70-373.000.

Entron Inc.: *See—*
Hoard, Norman F.; and Edick, Lee, 3,691,558.

Envirotech Corporation, mesne: *See—*
Mylting, Lauritz E., 3,690,731.

Enya, Ryosuke. Device for making molten metal for casting. 3,690,634, Cl. 266-33.00r.

Ephraim, Max, Jr.; and Smith, Earl D., to General Motors Corporation. Traction motor temperature control of locomotive power. 3,691,446, Cl. 318-472.000.

Eppensteiner, Frederick Walter; and Woehrle, Richard E., to M & T Chemicals Inc. Wire and strip line electroplating. 3,691,049, Cl. 204-206.000.

Eprova Aktiengesellschaft: *See—*
Suter, Hans; Zutter, Hans; and Brunner, Josef, 3,691,196.

Erben, Klaus Dieter; Kroy, Walter; Manhart, Sigmund; and Mehnert, Walter E., to Messerschmitt-Bolkow-Blohm GmbH. Superconductive device for electronic storage of large quantities of data using magnetic particles. 3,691,539, Cl. 340-173.100.

Erbert, Virgil, to Rolamite, Incorporated. Electromagnetic device. 3,691,461, Cl. 324-151.00r.

Ercoli, Alberto; and Gardi, Rinaldo, to Warner-Lambert Pharmaceutical Company. 17-Valerate ester of 6α,9α-difluoro-prednisolone, its compositions and use as an anti-inflammatory agent. 3,691,214, Cl. 260-397.450.

Erdy, Nicholas Z., to Stauffer Chemical Company. Novel detergent compositions. 3,691,106, Cl. 252-544.000.

Erdy, Nicholas Z.; and Yu, Arthur J., to Stauffer Chemical Company. Novel detergent compositions. 3,691,107, Cl. 252-544.000.

Erickson, Marlin D., 1/2 to Erikson, Janet E. Releasable button-like element. 3,689,962, Cl. 24-108.000.

Ericson, Donald W. Electro hydraulic servo valve. 3,690,345, Cl. 137-625.620.

Eriksen, Merrill K.: *See—*
Kiedrowski, Hugh P.; and Eriksen, Merrill K., 3,690,010.

Erikson, Janet E.: *See—*
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Sennewald, Kurt; Erpenbach, Heinz; Vogt, Wilhelm; Lork, Winfried; and Prinz, Peter, 3,691,096.

Escobedo, Francisco, to Fresco Industries, Inc. Helically-tracking milling assembly with tiltable thread cutting head. 3,690,220, Cl. 90-17.000.

Esso Production Research Company: *See—*
Matthews, Jamie F., Jr., 3,690,111.

Esso Research and Engineering Company: *See—*
Gray, William O., 3,690,281.
Guber, Fred H., Jr., 3,690,502.
Hamner, Glen P.; and Mason, Ralph B., 3,691,058.
Kroll, Wolfram R.; Doyle, Gerald; and Ruhle, Helmut W., 3,691,095.
Mertzweiller, Joseph K.; and Cull, Neville L., 3,691,101.
Miller, Alfred H., 3,691,237.
Mueller, David E.; and Segura, Marnell A., 3,690,930.
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Estes, John H.; and Bartley, Burton H. Selective temperature control of catalysts. 3,691,065, Cl. 208-159.000.

Estes, Phillip W., to Grace, W. R., & Co. Pressure sensitive adhesive articles having a release coating. 3,690,924, Cl. 117-68.500.

Estradier, Francoise: *See—*
Bugaut, Andree; and Estradier, Francoise, 3,690,810.

Etablissement Muller & Cie: *See—*
Brisard, Gerard, 3,690,145.

Etablissement Prairial: *See—*
Haller, Renee-Marie, 3,690,316.

Ethyl Corporation: *See—*
Jones, John T.; Ludt, William C.; and Kellogg, Hudson W., 3,690,851.
Kobetz, Paul; Lindsay, Kenneth L.; and Cook, Shirl E., 3,691,221.

Ettischer, Helmut, to Eastman Kodak Company. Synchronizing mechanism for photographic cameras adapted to use mechanically fired flash lamps. 3,690,236, Cl. 95-11.50r.

Etudes et Fabrication Aeromautiques: *See—*
Lemoigne, Pierre Marcel, 3,690,603.

Eutzler, Betty J. Device to prevent pilferage of merchandise. 3,690,130, Cl. 70-18.000.

Evans, John S., Jr.; and Jasper, Leslie L., to Mark Products, Inc. Orienting apparatus. 3,690,487, Cl. 214-340.000.

Everett, Eric George: *See—*
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Kilgour, John; Payne, Peter Charles John; Reid, John Stewart; and Everett, Eric George, 3,690,050.

Eversole, William C.: *See—*
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Ewing, Robert J.: *See—*
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Exner, William E., to Pyle-National Company, The. Impregnated ceramic insulators and method of making same. 3,691,512, Cl. 339-176.00m.

Fa, Charles H.; and Suzuki, Clarence K., to Advanced Memory Systems, Inc. Method for forming a field effect device. 3,690,968, Cl. 148-188.000.

Fabi, Franco: *See—*
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Facchini, Alessandro, to Snam Progetti S.p.A. Device and apparatus suitable to pulsed and controlled transfer of solids in liquid phase. 3,690,729, Cl. 302-15.000.

Fairbanks, Charles W.; and Rosecrants, William J., Jr., to Eastman Kodak Company. Eliminating processing defects in light-sensitive silver halide materials. 3,690,892, Cl. 96-110.000.

Falck-Muus, Rolf: *See—*
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Falke, Henning, to Vereinigte Draht-und Kabelwerke Aktiengesellschaft Berlin und Duisburg. Support arrangement for the conductors of low temperature cables. 3,691,287, Cl. 174-28.000.

Falkner, Raimund, to Rapena Patent & Verwaltungs AG. Method and device for making up metal bands into hollow rails. 3,689,970, Cl. 29-155.00r.

Fannin, Wayne V.; and Buchanan, Harry C., Jr., to General Motors Corporation. Combination valve for controlling two pressure sources. 3,690,689, Cl. 280-6.00h.

Farbenfabriken Bayer Aktiengesellschaft: *See—*
Bossert, Friedrich; and Vater, Wulf, 3,691,177.
Buchel, Karl-Heinz; Regel, Erik; Grewe, Ferdinand; Scheinpflug, Hans; and Raspers, Helmut, 3,691,192.
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Farbenfabriken Bayer Aktiengesellschaft: *See—*
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Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
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Rosch, Gunter; Linke, Werner; Smerz, Otto; and Schinzel, Erich, 3,690,947.

Farmer, Stanley E., to Cascade Corporation. Roll clamp. 3,690,714, Cl. 294-88.000.

Farrington, Allan P.; and Nastus, Anthony J., to Johnson & Johnson. Aspirator assembly. 3,690,563, Cl. 239-346.000.

Farrow, Desmond J. Turbine. 3,690,784, Cl. 415-55.000.

Faulkner, Bonnie G. After burning device for internal combustion engines. 3,690,105, Cl. 60-283.000.

Faulkner, William G., to Fletcher, Peter S. Rocking mount for chairs. 3,690,725, Cl. 297-258.000.

Faun-Werke Kommunalfahrzeuge und Lastkraftwagen Karl Schmidt: *See—*
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F.A.V. S.r.L.: *See—*
Sturmc, Giuseppe; and Maran, Mario, 3,690,165.

Favre, Robert. Signal generator for electronic commutation of a motor. 3,691,438, Cl. 318-138.000.

Feather, Peter; and Brugess, Colin Michael, to British Drug Houses Limited, The. 17α-(1',3' alkadiymyl)-17β-acyloxy(17β-aroyloxy) steroids. 3,691,212, Cl. 260-397.400.
Federal Auto Products Co., Inc.: *See*—
Philipps, Virgil, 3,690,703.
Federal Screw Works: *See*—
Tuttle, Phillip E., 3,690,558.
Fedorkov, Albert Pavlovich; Yaroslavsky, Mikhail Iosifovich; and Orlovskaya, Galina Yankelevna. Piezoelectric quartz element. 3,691,411, Cl. 310-9.500.
Fein, Marvin M.: *See*—
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Feinstein, Allen I.: *See*—
Fields, Ellis K.; and Feinstein, Allen I., 3,691,243.
Feldman, Julian; Lerman, Frank; and Miller, Franklyn D., to National Distillers and Chemical Corporation. Process for purification of vinyl acetate by extractive distillation. 3,691,021, Cl. 203-65.000.
Feldman, Julian; and Shaw, Robert J., to National Distillers and Chemical Corporation. Polyurethanes prepared from cyclic-alkyl diisocyanates. 3,691,134, Cl. 260-77.5at.
Feldmuehle Aktiengeselslschaft: *See*—
Opderbeck, Fritz; Ploetz, Theodor; and Thamm, Rudolf, 3,691,009.
Feldstein, Nathan, to RCA Corporation. Electroless nickel plating method. 3,690,944, Cl. 117-160.00r.
Feltman, Stanley, to REA International Corporation. Static inverter having automatic means for providing a highly regulated A.C. output despite changes in the input D.C. level. 3,691,449, Cl. 321-27.0ms.
Fendel, Kurt: *See*—
Bauer, Johann; Fendel, Kurt; and Balwe, Thomas, 3,691,080.
Fenton, Francis Michael, to Bell Telephone Laboratories, Incorporated. Busy and talking link allotter circuit for electronic key telephone system. 3,691,310, Cl. 179-18.0ad.
Ferlazzo, Natale: *See*—
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Ferlise, Louis; and Duhamel, Ronald E., to Panacon Corporation. Range hood unit with fire safeguard fan control system. 3,690,245, Cl. 98-115.00k.
Fernandez, Diana S. Number sequence teaching aid. 3,690,019, Cl. 35-31.00r.
Ferog, Fehr & Reist AG: *See*—
Reist, Walter; and Kuratle, Hans Rudolf, 3,690,645.
Ferrari, Andres, to Damon Corporation. Automated fluids analyzer having selectively interrupted flow. 3,690,833, Cl. 23-230.00r.
Ferrill, Homer E., to Dresser Industries, Inc. High pressure sealing means. 3,690,682, Cl. 277-102.000.
Fewell, Larry K.: *See*—
Eltzroth, Richard E.; and Fewell, Larry K., 3,689,983.
Fields, Ellis K.; and Feinstein, Allen I., to Standard Oil Company. Arylation of olefins. 3,691,243, Cl. 260-669.00r.
Filatov, Albert Ivanovich: *See*—
Pluzhnikov, Viktor Mikhailovich; Kalantarov, Karl Davidovich; Gugnin, Jury Yakovlevich; Semenov, Valentin Sergeevich; Zelenina, Valentina Vasilievna; and Filatov, Albert Ivanovich, 3,690,309.
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Finley, John G. Supported releasable polyolefin films. 3,690,909, Cl. 117-6.000.
Finn, John J., 1/2 to Glenn Electric Heater Corporation. Electric heater. 3,691,347, Cl. 219-535.000.
First City National Bank of Houston, mesne as Trustee of the Callery, Francis A., 1968 Trust: *See*—
Compton, Robert G.; Richmond, Ray S.; and Tracy, Robert A., 3,691,373.
Fischer & Porter Company: *See*—
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Fischer, Adolf: *See*—
Kiefer, Hans; and Fischer, Adolf, 3,691,234.
Fischer, Hans Jurgen; and Behrmann, Georg, to Faun-Werke Kommunalfahrzeuge und Lastkraftwagen Karl Schmidt. Portable platforms, with roller means installed on their upper side, for the handling and transporting of freight. 3,690,485, Cl. 214-310.000.
Fischer, Peter, to Farbenfabriken Bayer Aktiengesellschaft. Certain 2-alkoxymethyl-3-chloro-Δ^3-1,2,4-thiadiazolin-5-ones and their preparation. 3,691,184, Cl. 260-302.00d.
Fischer, Stefan. Apparatus for the manufacture of hollow objects, in particular bottles of thermoplastic material utilizing injection blowing method. 3,690,802, Cl. 425-326.000.
Fisher, Peter D.; Mergerian, Dickron; and Minarik, Ronald W., to Westinghouse Electric Corporation. Device to measure infrared radiation. 3,691,383, Cl. 250-83.30h.
Fishman, Murray, 49% to Loscalzo, Nicholas R. and 51% to Coloprisco, Frank. Leather printing composition. 3,691,118, Cl. 260-19.0va.
Fisk, Dale E., to International Business Machines Corporation. Two-way communication system for video and digital data. 3,691,295, Cl. 178-58.000.
Fiverel, Societe Civile d'Etudes et de Recherches: *See*—
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Fleissner, Josef, to Agfa-Gevaert Aktiengesellschaft. Projector for photographic transparencies. 3,690,186, Cl. 353-103.000.
Fletcher, Peter S.: *See*—
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Fleury, Jacques. Automotive hydroelastic suspension with level correction. 3,690,688, Cl. 280-6.00h.
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Floria, Joseph Angelo, to Du Pont de Nemours, E. I., and Company. 1,1,1,3,3,3-Hexafluoro-2-propanol/c1 to c4 alkanol complexes. 3,691,092, Cl. 252-364.000.
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Florian, Berkeley Julian; and Florian, Berkeley Jay. Foldable lawn and garden cart. 3,690,692, Cl. 280-36.00c.
Flototto, Fritz. School desks. 3,690,743, Cl. 312-231.000.
Fluegel, Dale A. Thermocouple reference junction. 3,690,177, Cl. 73-361.000.
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Ouska, Ralph C., 3,690,445.
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Foizner, Julius, to Newark Tool & Machine Limited. Adjustable stand. 3,690,608, Cl. 248-371.000.
Fomin, Alexandr Pavlovich: *See*—
Potak, Yakov Mikhailovich; Orzhekhovsky, Julian Felixovich; Sachkov, Vladimir Vladimirovich; Kagan, Efim Solomonovich; Valdman, Anna Ivanovna; Shpagina, Nadezhda Nikolaevna; Poplavko-Mikhailov , Mikhail Vasilievich; Fomin, Alexandr Pavlovich; and Natapov, imon Leibovich, 3,690,869.
Fontaine, Paul Isidore, to International Nickel Company, Inc., The. Desulphurizing plant alloy. 3,690,873, Cl. 75-134.00f.
Food Equipment Inc.: *See*—
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Ford Motor Company: *See*—
Denton, Ronald T., 3,690,174.
Forlani, Franco; and Rodari, Gianpiero, to Honeywell Information Systems, Italia. Convertible NAND/NOR gate. 3,691,401, Cl. 307-215.000.
Fornells, Gilbert. Trellis or lattice structure designed to be mounted by self-engagement or by sliding. 3,690,032, Cl. 47-45.000.
Foster, Robert D.: *See*—
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Frania, Josef; and Lehnert, Erhard, to Westinghouse Bremsen- und Apparatebau GmbH. Automatic single-acting slack adjuster for brake rod linkage. 3,690,421, Cl. 188-203.000.
Frank, Charles A. Vapor treatment hood. 3,690,289, Cl. 118-48.000.
Frank, Herman J.; and Moch, Irving, Jr., to Du Pont de Nemours, E. I., and Company. Efficiency of nickel-aluminum catalysts by water washing. 3,691,093, Cl. 252-420.000.
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Frederick, Charles D.; Dembny, Kenneth D.; and Thomson, Meredith C. Method and apparatus for washing cheese curd. 3,690,002, Cl. 31-89.000.
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Frei, Karl. Thread sensing arrangement. 3,689,963, Cl. 28-1.00r.
Freitag, Lawrence F., to Allen-Bradley Company. Circuit boad assembly with positive latch. 3,691,430, Cl. 317-101.0dh.
French, Lawrence R.; and Skinner, Wilson M., to Gulf Oil Corporation. Selective hydrogenation of acetylenes. 3,691,248, Cl. 260-677.00h.
French State represented by the Minister of Armed Forces Ministerial Delegation of Weapons, Technical Delegation of Land Weapons, Manufacturing Workshops of Toulouse: *See*—
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Frost, Harold A.; and Simpson, Melvin R., to Eaton Yale & Towne, Inc. Tire inflation monitoring system. 3,691,524, Cl. 340-58.000.

Frush, John P. Impression tray and method for making impressions. 3,690,004, Cl. 32-17.000.

Fryer, Rodney Ian; and Sternbach, Leo Henryk. Preparation of 7-substituted-1-(2-diethylaminoethyl) -5-(2-halophenyl)-1,3-dihydro-2H-1,4-benzodiazepin-2-ones. 3,691,157, Cl. 260-239.30d.

Fuchsle, Klaus: *See—*
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Futerko, William J. Segmental torch tip for mixing and combustion of gases. 3,690,564, Cl. 239-424.500.

Futterer, Bodo; Stemme, Otto; and Mayer, Jurgen. Electrofilter for gases. 3,690,043, Cl. 55-150.000.

Futuristic Building Products Inc.: *See—*
Byland, Henry L., 3,690,082.

Fuwa, Zydichi. Electronic flashlight device for flashlight photography. 3,690,237, Cl. 95-11.50r.

G K N Windsor Limited: *See—*
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Gabillard, Robert; Louage, Francois; and Desbrandes, Robert, to Institut Francais du Petrole, des Carburants et Lubrifiants. Process for prospecting of the ground layers surrounding a borehole. 3,690,164, Cl. 73-151.000.

Gabor, Andrew, to Diablo Systems, Inc. Magnetic memory disk drive apparatus with reduced R. F. noise. 3,691,542, Cl. 340-174.10b.

Gabrielsen, Rolf S.; and Olivares, Ismael A., to Eastman Kodak Company. Photographic developing process with amino hydroxy cycloalkenone. 3,690,872, Cl. 96-66.0hd.

Gachot, Jean; and Perales, Fernand. Compressed-air braking and locking system for trailers or semitrailers. 3,690,733, Cl. 303-7.000.

Gaebele, Rolf; and Jones, Jack H., to GTE Sylvania Incorporated. Automatic light control for low light level television camera. 3,691,302, Cl. 178-7.200.

GAF Corporation: *See—*
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Gagin, Lawrence Vincent; and Hull, Glenn Ralph, to Johns-Manville Corporation. Die pad for extruding hot metals. 3,690,135, Cl. 72-42.000.

Gailus, Walter J.; and Hoenig, James R., to Continental Can Company Inc. Profiled bottom wall for extruded and wall ironed cans. 3,690,507, Cl. 220-66.000.

Gaiser, Edward J.; and Ellett, Kenneth W., to Gaiser Tool Company. Bonding tool. 3,690,538, Cl. 228-3.000.

Gaiser Tool Company: *See—*
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Galina, Nisonovna Budnitskaya: *See—*
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Galinke, Joachim: *See—*
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Gallina, Harold. Control circuit responsive to synch signals. 3,691,544, Cl. 340-174.10b.

Galmiche, Philippe Marie; and Hivert, Andre, to Office National d'Etudes et de Recherches Aerospatiales. Method of forming chromium and aluminum diffusion alloys on metal pieces. 3,690,934, Cl. 117-107.20p.

Gantt, Kenneth T. Hair trigger burglar alarm. 3,690,286, Cl. 116-86.000.

Garcia, Armando J.; Gunther, Gregory M.; and Villanueva, Juanito O., to Mattel, Inc. Flexible waisted doll utilizing elastomeric coupling members. 3,690,030, Cl. 46-161.000.

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Gardi, Rinaldo: *See—*
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Gargrave, Robert J.; Greene, Robert E.; and Keyes, Karl A. Die-assembly. 3,690,209, Cl. 83-687.000.

Garner, Paul Johnson, to Imperial Chemical Industries Limited. Injection moulding machines. 3,690,797, Cl. 425-146.000.

Garrett, Donald E. Ion exchange process for aluminum values. 3,690,827, Cl. 423-112.000.

Garstang, William W., to Syncro Corporation. Alloyed metal oxide capacitor. 3,691,433, Cl. 317-230.000.

Gartner, Rodney W.: *See—*
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Gartner, Todd; and Van Husen, Hendrik W., to Automatic Electric Laboratories, Inc. Continuity and foreign potential detector. 3,691,309, Cl. 179-18.0ab.

Gasc, Jean-Calude: *See—*
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Gaumont, Richard J. Vehicle towing device. 3,690,482, Cl. 214-86.00a.

Gaven, Thomas J.; and Whitlock, Bruce N., to McGraw-Edison Company. Cassette and dictating machine for belt type records. 3,690,678, Cl. 274-4.00j.

Gawron, Stanley A.; and Helland, Kristian L., to Addressograph-Multigraph Corporation. Charging device. 3,691,375, Cl. 250-49.52c.

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Gebauer, Wolfgang: *See—*
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Gebr. Bohler & Co., AG: *See—*
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Geffcken, Walter; and Paquet, Volker, to JENAer Glaswerk Schott & Gen. Method for producing mixed layers from inorganic and organic substances on a substrate. 3,690,932, Cl. 117-106.00r.

Geiger, Joseph A. Heat and air action apparatus for electronic circuitry repairs. 3,690,539, Cl. 228-20.000.

General Dynamics Corporation: *See—*
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Gorin, Everett; and Yavorsky, Paul M., to Consolidation Coal Company. Desulfurization of flue gas. 3,690,824, Cl. 423-243.000.

Gorsuch, Reynolds G., to Bourns, Inc., mesne. Apparatus for parenteral fluid infusion provide with variable flow control means. 3,690,318, Cl. 128-214.00e.

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Gralenski, Nicholas M., to Watkins-Johnson Company. X-ray generating assembly and system. 3,691,417, Cl. 313-57.000.

Gramain, Jean, to Pneumatiques, Caoutchouc Manufacture et Plastiques Kleber Colombes. Sleeve for connecting pipes. 3,690,701, Cl. 285-111.000.

Grandle, James Arthur, Jr., to Bell Telephone Laboratories, Incorporated. Coin station timing test arrangement. 3,691,320, Cl. 179-175.200.

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Graves, Ralph L., to General Electric Company. Heater cable splice and method of forming. 3,691,505, Cl. 338-214.000.

Gray, Allan Poe, to Neisler Laboratories, Inc. 2-(Alkylthioalkyl)-1,2,3,4-tetrahydroisoquinolines. 3,691,169, Cl. 260-283.00s.

Gray, Allan Poe. 2-(Thiocyanoalkyl)-1,2,3,4-tetrahydroisoquinolines. 3,691,170, Cl. 260-283.0cn.

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Guyot, Raymond, to Fiverel, Societe Civile d'Etudes et de Recherches. Glass cords and tires and similar rubber articles reinforced therewith. 3,690,363, Cl. 152-359.000.
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Hasselbach, Werner; and Pompili, Peter L., 50% to Sel-Con, Inc. and 50% to Verti-East, Inc. Power connection selection apparatus. 3,691,441, Cl. 318-441.000.
Hasz, John R.: *See—*
Aggarwal, Trilok C.; and Hasz, John R., 3,690,414.
Hauke, Gary F. Tic-tac-toe game. 3,690,664, Cl. 273-127.00d.
Hauni-Werke Koerber & Co., K.G.: *See—*
Heitmann, Bob, 3,690,327.
Haunschild, Willard M.; Jacobson, Robert L.; and McCoy, Charles S., to Chevron Research Company. Combined hydrofining-reforming process. 3,691,062, Cl. 208-89.000.
Hause, Gilbert K., to General Motors Corporation. Hydrostatic drive. 3,690,398, Cl. 180-66.00r.
Hawerkamp, Manfred. Apparatus for making helical-seam tubing from a synthetic-resin strip. 3,690,993, Cl. 156-429.000.
Hayakawa, Fumio: *See—*
Maeda, Hiroshi; Hasegawa, Koichi; Sekiguchi, Hisashi; and Hayakawa, Fumio, 3,691,228.
Hayama, Akio. Method and apparatus to delay deterioration of brake oil. 3,690,422, Cl. 188-264.00d.
Hayashi, Izjo, to Bell Telephone Laboratories, Incorporated. Double heterostructure laser diodes. 3,691,476, Cl. 331-94.500.
Hayashi, Yutaka; and Tarui, Yasuo, to Kogyo Gijutsuin. Method of manufacturing microstructures. 3,690,966, Cl. 148-187.000.
Hayashibara Company: *See—*
Sakai, Shuzo; Miyake, Toshio; and Sato, Yoshinori, 3,691,013.
Haydon, Arthur W., to Tri-Tech, Inc. Clock system. 3,690,059, Cl. 58-24.00r.
Hayes, John C.; and Pollitzer, Ernest L., to Universal Oil Products Company. Hydrocarbon conversion with a multicomponent catalyst. 3,691,064, Cl. 208-136.000.
Hays, Robert Guy; Pennell, Charles Ronald; Reed, Edwin Emmett; and Volk, Charles Edward, to Motorola, Inc. Method of doping semiconductor substrates. 3,690,969, Cl. 148-188.000.
Head, Beverly P., Jr.: *See—*
Pearl, David L.; Harris, George E.; Waller, John G.; and Head, Beverly P., Jr., 3,690,986.
Heaton, James W.; Eversole, William C.; and Friedline, Ernest J., to Kennametal Inc. Adjusting collar arrangement, especially for a boring bar. 3,690,783, Cl. 408-146.000.
Heckert, David Clinton, to Procter & Gamble Company, The. Preparation of vicinal glycols from vicinal dihalides. 3,691,218, Cl. 260-410.700.
Hedman, Theodore A., to Gulf & Western Industries, Inc. Substantially ripple-free fast response voltage regulated direct-current power supply. 3,691,412, Cl. 321-18.000.
Heede International Ltd.: *See—*
Murray, Donald R.; Van Soest, Cornelius J. M.; and Moulson, Donald C., 3,690,412.
Hein, Richard D. Elastomeric expansion joint for bridges and other structures. 3,690,226, Cl. 94-18.000.
Heine, Desire. Device for discharging a body or container by means of a pressure member or platen. 3,690,480, Cl. 214-17.00d.
Heinicke, Karl. Oil recovery vessel for the removal of oil and other polluting matter floating on the water surface. 3,690,464, Cl. 210-242.000.
Heitmann, Bob, to Hauni-Werke Koerber & Co., K.G. Apparatus for regulating the start and termination of delivery of components of rod-shaped articles in filter cigarette machines or the like. 3,690,327, Cl. 131-21.00r.
Helland, Kristian L.: *See—*
Gawron, Stanley A.; and Helland, Kristian L., 3,691,375.
Heller, Gunter: *See—*
Haberkern, Ottmar; and Heller, Gunter, 3,690,749.
Helmcke, Conrad: *See—*
Bogenberger, Richard; Helmcke, Conrad; and Kritikos, Athanasios, 3,691,533.
Helms, Millard O.; and Dunbar, Oris G. Vehicle wheel temperature monitoring system. 3,691,523, Cl. 340-57.000.
Helzner, Albert E., to Badger Company, Inc., The. Production of ethylbenzene. 3,691,245, Cl. 260-671.00r.
Hemminger, James W., to American Metal Climax, Inc. Moisture deflector. 3,690,079, Cl. 52-97.000.
Hempstead, Cyril Frank, to King, Geo W. Conveyor systems. 3,690,269, Cl. 104-172.00s.
Hendrickson, Melvin C.: *See—*
Merrell, Richard G.; and Hendrickson, Melvin C., 3,691,297.
Hendrickson, William W.; and Davis, Patrick J., to UMC Industries, Inc. Interlocked selection control apparatus. 3,691,431, Cl. 317-137.000.
Heneghan, Patrick J., to Teletype Corporation. Alarm circuit. 3,691,548, Cl. 340-248.000.
Henley, John C., III. Position locator. 3,690,009, Cl. 33-1.0mp.
Hennings, Klaus: *See—*
Schutze, Hans-Jurgen; and Hennings, Klaus, 3,689,992.
Hepburn, Douglas I. Pull type frictional resistance exercising device. 3,690,654, Cl. 272-79.00d.
Herbert, Donald C. Protective windshield. 3,690,721, Cl. 296-78.100.
Hercules Incorporated: *See—*
Lees, Ronald D.; and Smith, Ronald W., 3,691,086.
Willis, William D., 3,691,113.
Herk, Van Cornelis; and Cornelis, Johannes, to Koninklyke Nederlandscke Hoogovens ent Staalfabriken. Regenerative air heater such as hot blast stove. 3,690,627, Cl. 263-19.00r.
Herman, Hans, to Steel Company of Canada, Limited, The. Method and apparatus for scrap coil transfer in continuous strip processing lines. 3,690,583, Cl. 242-78.100.
Herndon, Robert R. Trailer stabilizer. 3,690,694, Cl. 280-150.500.
Herolf, Kjell Olof Gunnar, to Kockum Soderhamn AB. Apparatus for deliming trees. 3,690,352, Cl. 144-2.00z.
Herrington, Francis Walter; and Mc Clure, James D. Wheel assembly. 3,690,648, Cl. 271-51.000.
Herrington, Troy A.; and Emich, Gerald E. Game hangers and methods of making and using the same. 3,689,959, Cl. 17-44.300.
Herzhoff, Peter; Platz, Stephan; Gref, Hans; Schwenger, Willi; Maus, Fritz; Schweicher, Wolfgang; Koepke, Gunther; Wasser, Willi; and Browatzki, Kurt, to Agfa-Gevaert Aktiengesellschaft. Suction system and process for coating arrangements avoiding the tranmission of pressure difference to the coating operation. 3,690,917, Cl. 117-34.000.
Hettich, Alfred: *See—*
Klett, Erich; Paule, Kurt; and Hettich, Alfred, 3,691,407.
Heuser, Raymond C.: *See—*
Parker, Gordon M.; and Heuser, Raymond C., 3,690,927.
Hexcel Corporation: *See—*
Jackson, Wendell T.; and Balaban, Martin M., 3,690,161.
Higashide, Eiji: *See—*
Kishi, Toykazu; Harada, Setsuo; Misuno, Komei; Higashide, Eiji; and Shibata, Motoo, 3,691,181.
Higashide, Eiji; Hasegawa, Toru; Ono, Hideo; Asai, Mitsuko; Muroi, Masayuki; and Kishi, Toyokazu, to Takeda Chemical Industries, Ltd. Antibiotic B-5050 and production thereof. 3,691,280, Cl. 424-119.000.
Higgens, Calvin E.: *See—*
Thompson, Robert Q.; Stark, William M.; and Higgens, Calvin E., 3,691,279.

Higginbotham, William W., to Monroe Auto Equipment Co. Vehicle leveling system switch having vibrating preventing means. 3,691,336, Cl. 200-166.00h.

Higgins, James H. Plastic foam spray gun with substantially instantaneous cleaning feature. 3,690,557, Cl. 239-112.000.

Hilberath, Friedrich; and Teggers, Hans, to Union Rheinische Braunkohlen Kraftstoff Aktiengesellschaft. Process for transporting thermal energy. 3,690,550, Cl. 237-81.000.

Hilgers, Arnold, to Schumag Schumacher Metallwerk G.m.b.H. Method of controlling a machine tool operated a different working speeds and control system for performing the same. 3,690,133, Cl. 72-19.000.

Hill, Oiva E., to Warner & Swasey Company, The, mesne. Taper compensating method and apparatus. 3,690,071, Cl. 51-165.910.

Hilti Aktiengesellschaft: *See—*
Chromy, Franz, 3,690,390.

Hilton, Joseph Lawrence; Graff, Charles Russell; and Cavin, Lewis Fred, to Raymond International Inc. Installation of sand drains. 3,690,388, Cl. 175-20.000.

Hinkley, David F., to Merck & Co., Inc. Curing or meat and meat curing preparation therefor. 3,690,901, Cl. 99-159.000.

Hinrichs, Gordon, to General Motors Corporation. Electronic combination door and ignition lock. 3,691,396, Cl. 307-40.000.

Hiramoto, Toshiyuki: *See—*
Tanaka, Eiichi; Hiramoto, Toshiyuki; and Nohara, Norimasa, 3,691,379.

Hirokawa, Koichi: *See—*
Kagari, Yoshiharu; Hirokawa, Koichi; and Hasegawa, Toru, 3,690,251.

Hiroshi, Hanada, to Canon Kabushiki Kaisha. Process for preparing photoconductive powders. 3,691,104, Cl. 252-501.000.

Hirota, Tatsuo, to Pantel Co., Ltd. Push-button type writing instrument with a cap. 3,690,778, Cl. 401-66.000.

Hirotani, Tadashi: *See—*
Tanaka, Masatami; and Hirotani, Tadashi, 3,690,621.

Hirschman, Shalom Z. Catamenial device. 3,690,321, Cl. 128-285.000.

Hirtreiter, Walter J. Method and apparatus for balancing a body about an axis. 3,690,152, Cl. 73-66.000.

Hitachi, Ltd.: *See—*
Mouri, Katsuo; Miyazaki, Gentaro; and Nabeyama, Hiroaki, 3,691,475.
Okuyama, Kenichi, 3,691,494.
Shimada, Hiroshi; Nagai, Mitsuru; Ohfuji, Mitsuo; and Sasaki, Toshiyuki, 3,690,305.
Yoshikawa, Mituhiro; Nihei, Hiroshi; and Shibasaki, Hiroichi, 3,691,423.

Hivert, Andre: *See—*
Galmiche, Philippe Marie; and Hivert, Andre, 3,690,934.

Hoard, Norman F.; and Edick, Lee, to Entron Inc. Moving object microwave detection system. 3,691,558, Cl. 343-7.700.

Hobbs, Anthony Edward Walter, to British Railways Board. Dampened railway car truck. 3,690,271, Cl. 105-199.00r.

Hocking, Loren P.; and Lotti, Louis B., 10% to Colman, Benjamin W. Early warning brake fault system. 3,691,522, Cl. 340-52.00c.

Hoenig, James R.: *See—*
Gailus, Walter J.; and Hoenig, James R., 3,690,507.

Hoffman, Herwig; Jescher, Gerhard; Kuerzinger, Alfred; Schmidt, Erwin; Schoenleben, Willibald; Voges, Dieter; and Winderl, Siegfried. Production of 6-alkoxy-5,6-othydro-4H-pyrans. 3,691,205, Cl. 260-345.900.

Hoffman, John A. Electrically converted fire tube boiler and method. 3,691,344, Cl. 219-321.000.

Hoffmn-La Roche Inc.: *See—*
Saucy, Gabriel, 3,691,189.

Hofmann, Kurt, to Hartmann & Braun Aktiengesellschaft. Device for metering a particular quantity of fluid. 3,690,146, Cl. 73-23.100.

Holan, Leif A., to Holan, Leif A., Wernz, William, and Miesbauer, Rudolph; stockholders of Winona Industries, Inc. Cutter assembly for a woodworking machine. 3,690,356, Cl. 144-136.00r.

Holan, Leif A., Wernz, William, and Miesbauer, Rudolph; stockholders of Winona Industries, Inc.: *See—*
Holan, Leif A., 3,690,356.

Holk, Albert J., Jr.: *See—*
Boik, Arnold R.; and Holk, Albert J., Jr., 3,690,706.

Hollander, Irvin. Trailer break away switch mount. 3,691,330, Cl. 200-61.190.

Holm, LeRoy W., to Union Oil Company of California. Soluble oil composition. 3,691,072, Cl. 252-8.55d.

Holmquist, Larry M. Coin value teaching device. 3,690,017, Cl. 35-24.00r.

Holtum, Alfred G., Jr., to Andrew Corporation. Radiating coaxial cable and method of manufacture thereof. 3,691,488, Cl. 333-84.00r.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Honda, Soichiro, 3,690,429.

Honda, Masatsugu; and Shinozaki, Masanobu, to Victor Company of Japan, Limited. Protective circuit for an all stage direct-coupled transistor output transformerless-output condenserless amplifier. 3,691,427, Cl. 317-31.000.

Honda, Soichiro, to Honda Giken Kogyo Kabushiki Kaisha. Clutch with dual pistons and springs. 3,690,429, Cl. 192-85.0aa.

Honeywell Inc.: *See—*
Resh, John S., 3,691,331.
Shiosaki, James T., 3,691,552.
Wainio, Allan C., 3,690,581.

Honeywell Information Systems, Inc.: *See—*
Edfors, John Eric; Romano, Domenic; and Quattrini, Victor, 3,691,432.

Honeywell Information Systems, Italia: *See—*
Forlani, Franco; and Rodari, Gianpiero, 3,691,401.

Honig, Hans Ludwig: *See—*
Scheibitz, Maria; Von Konig, Anita; Kampfer, Helmut; Mayer, Dietmar; Sasse, Klaus; Kolb, Gunter; Honig, Hans Ludwig; and Meiser, Werner, 3,690,884.

Hooker Chemical Corporation: *See—*
Grotheer, Morris P., 3,690,845.

Hookings, Paul Henry Heathcote: *See—*
Sibakin, Jaroslaw George; Roeder, Gordon Alan; and Hookings, Paul Henry Heathcote, 3,690,867.

Hooper, George H. Tide-powered unit and floating platform utilizing same. 3,690,790, Cl. 417-331.000.

Hopkinson, Eric C.; and Youmans, Arthur H., to Dresser Industries, Inc. Simultaneous pulsed neutron well logging. 3,691,378, Cl. 250-71.50r.

Horibata, Hiroshi. Aquatic sled and shooting apparatus thereof. 3,690,265, Cl. 104-70.000.

Horn, Myron K.: *See—*
Robinson, John C.; and Horn, Myron K., 3,691,384.

Hornbecker, Merton F.: *See—*
Copley, Stephen M.; Giamei, Anthony F.; Hornbecker, Merton F.; and Kear, Bernard H., 3,690,368.

Horning, Kermit G., to Thiokol Chemical Corporation. Acid dyeing for tertiary aminated polyamide, polyolefin and polyamide blends and disperse dyeing of said polyolefin and polyester blends. 3,690,811, Cl. 8-21.00b.

Hornung, Karl-Heinz: *See—*
Riemhofer, Franz; Dittmann, Walter; Biethan, Uwe; Hornung, Karl-Heinz; and Schutze, Ernst-Christian, 3,691,258.

Horodysky, Andrew G., to Mobil Oil Corporation. Process for preparing overbased zinc phosphorodithioates. 3,691,220, Cl. 260-429.900.

Horst, William. Concrete pipe making apparatus. 3,689,967, Cl. 29-116.00r.

Hoshi, Hiroshi: *See—*
Susuki, Rinnosuke; Hoshi, Hiroshi; Satto, Jiro; and Okada, Minoru, 3,691,120.

Houston Gamma Ray Company: *See—*
Ketchbaw, Thomas E.; Foster, Robert D.; and Arvanetakis, Kiryako, 3,691,385.

Howard, Robert, to Centronics Data Computer Corporation. Print head assembly containing solenoids. 3,690,431, Cl. 197-1.00r.

Howe, John G., to AMF Incorporated, mesne. Tennis racket. 3,690,658, Cl. 273-73.00c.

Howe, Robert K.: *See—*
Baker, Joseph W.; and Howe, Robert K., 3,691,227.

Hoyler, Robert C., to Westinghouse Electric Corporation. Vehicle detection system and method. 3,691,368, Cl. 246-29.00r.

Hristova, Snejanka Vladimirova: *See—*
Angelov, Stefan Christov; Hristova, Snejanka Vladimirova; and Srebrev, Srebryu Yovtchev, 3,691,358.

Hrubesh, Lawrence W.: *See—*
Hrubesh, Lawrence W.; and Anderson, Roger E. (said Anderson assor. to said), 3,691,454.

Hrubesh, Lawrence W.; and Anderson, Roger E., said Anderson assor. to said Hrubesh, Lawrence W. Microwave cavity gas analyzer. 3,691,454, Cl. 324-.50r.

Hruby, John O., Jr., to Rain Jet Corporation. Multi-tier fountain nozzle. 3,690,554, Cl. 239-17.000.

Huber, William B., to Motorola, Inc. Fast forward tape advance. 3,690,198, Cl. 74-785.000.

Hubner, Klaus; Prokert, Konrad; and Stolz, Werner, to VEB Fluorwerke Dohna. Threshold value dosage meter. 3,691,380, Cl. 250-83.0cd.

Huck Manufacturing Company: *See—*
Van Hecke, George J.; and Cassell, Robert D., 3,689,951.

Huebner, Werner P. E.; and Long, Robert G., to D. D. I. Communication, Inc. Multiplexer transmission line circuit. 3,691,304, Cl. 179-15.00r.

Huebner, Werner P. E.; and Long, Robert G., to D. D. I. Communication, Inc. Multiplexer interval detector. 3,691,305, Cl. 179-15.0aw.

Hueschen, Gordon: *See—*
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Huettner, Rudolf: *See—*
Biller, Efim; Huettner, Rudolf; and Velling, Gunter, 3,691,238.

Hughes Aircraft Company: *See—*
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Joujon-Roche, Phillip J.; and Smith, Loyd D., 3,691,469.

Hughes, Alan T.: *See—*
Hughes, David A.; and Hughes, Alan T., 3,690,656.

Hughes, David A.; and Hughes, Alan T., to Dalan Company. Table game. 3,690,656, Cl. 273-1.00r.

Hughes, Richard E., to Badger Company, Inc., The. Styrene plant waste heat utilization in a water desalination process. 3,691,020, Cl. 203-25.000.

Hughes, William B.; and Zuech, Ernest A. Conversion of olefins using complexes of V or N containing no with organo aluminums. 3,691,253, Cl. 260-683.00d.

Hull, Glenn Ralph: *See—*
Gagin, Lawrence Vincent; and Hull, Glenn Ralph, 3,690,135.

Humberstone, Geoffrey H.: *See—*

Harker, Howard R.; and Humberstone, Geoffrey H., 3,690,635.
Humbert, Jean; and Studer, Jean-Fred, to OMEGA Louis Brandt & Frere S.A. Watch having a two-piece winding stem. 3,690,061, Cl. 58-63.000.
Humes, Carl E. Steering assembly for trailers. 3,690,698, Cl. 280-426.000.
Huntington, Jack F. Safety device for directing traffic. 3,691,526, Cl. 340-119.000.
Hurley, Forrest R.; Tecotzky, Melvin; and Vanik, Milton C., to Grace, W. R., & Co. Method for the preparation of uranium oxide sols. 3,691,087, Cl. 252-301.10s.
Husken, Albert Leon Lucien. Process for the production of phosphoric acid by the wet method. 3,690,826, Cl. 423-320.000.
Huttemann, Helmut. Cutting apparatus for foam material and the like. 3,690,203, Cl. 83-1.000.
Hutz, Gerhard; and Muller, Karl, to Siempelkamp, G., & Co. Discharge device for platen press. 3,690,801, Cl. 425-229.000.
Hyland, Albert L., Jr., to Polaroid Corporation. Method of forming a litho plate by diffusion transfer. 3,690,883, Cl. 96-29.00l.
Hylen, Lyle L., to Westinghouse Air Brake Company. Trailable railway switch machine. 3,691,371, Cl. 246-393.000.
Ichikawa, Yasushi: *See*—
Ohfuka, Toshio; Ichikawa, Yasushi; and Ueda, Takeshi, 3,691,110.
Ichiki, Eiichi; Iida, Kazuo; Inoue, Yashuhiko; and Uyeo, Keizo, to Sumitomo Chemical Co., Ltd. Olefin sulfonate detergent composition. 3,691,108, Cl. 252-555.000.
Ichimura, Hirohisa, to Nissan Jidosha Kabushiki Kaisha. Hydraulic govenor valve assembly. 3,690,335, Cl. 137-54.000.
Ichinose, Noboru, to Tokyo Shibaura Electric Co., Ltd. Piezoelectric oxide materials. 3,691,079, Cl. 252-62.900.
Ignelzi, Antonio; and Monari, Orlando. Rotary engine. 3,690,095, Cl. 60-39.270.
Iida, Kazuo: *See*—
Ichiki, Eiichi; Iida, Kazuo; Inoue, Yashuhiko; and Uyeo, Keizo, 3,691,108.
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Arai, Hiroshi; Nakamura, Akira; Ikamoto, Atutosi; Okumura, Shunki; Suzuki, Motoyoshi; and Sugiura, Akio, 3,690,735.
Illinois Tool Works Inc.: *See*—
Elliott, Phillip M., 3,691,333.
Imai, Masaru; and Ohkawa, Tokio. Guitar. 3,690,210, Cl. 84-267.000.
Imperial Chemical Industries Limited: *See*—
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Buckley, Charles Harold; Mitchell, John; and Collier, Geoffrey Lionel, 3,690,906.
Clarke, Michael Raymond; Osmond, Desmond Wilfrid John; and Waite, Frederick Andrew, 3,691,123.
Garner, Paul Johnson, 3,690,797.
Greenhalgh, Colin William; and Newton, David Francis, 3,691,209.
MacColl, Donald; and O'Pray, Hugh, 3,691,349.
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Barassi, Carlo; Lugli, Giuseppe; Mezzanotte, Mario; and Guermandi, Romano, 3,690,364.
Ingram, Brian; Spence, Douglas Roy; and Cochrane, Robin Adam, to Girling Limited. Hydraulic systems for vehicles. 3,690,738, Cl. 303-21.00f.
Inland Steel Company: *See*—
Valonis, Edmund J., 3,690,134.
Innerman, Sven Eric: *See*—
Edstrom, John Olof; Innerman, Sven Eric; Berg, Bengt Henrik; and Mills, Brian Edward, 3,690,850.
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Institut Francais du Petrole, des Carburants et Lubrifiants: *See*—
Gabillard, Robert; Louage, Francois; and Desbrandes, Robert, 3,690,164.
Institut Textile de France: *See*—
Delair, Jean-Paul; and Raisin, Jean-Pierre, 3,690,123.
Institute for Cancer Research, The: *See*—
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Institute of Gas Technology: *See*—
Mokaoam, Raghunath G., 3,690,113.
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International Business Machines Corporation: *See*—
Almasi, George S.; Chang, Hsu; Keefe, George E.; and Thompson, David A., 3,691,540.
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Malley, William G.; and Cayton, David W., 3,690,383.
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Inventa AG: *See*—
Wampetich, Matthias J.; and Griehl, Wolfgang, 3,690,926.
Inwood, Texas V. Hydrogenation of aromatic hydrocarbons. 3,691,060, Cl. 208-89.000.
Ishida, Takashi, to Mikuni Kogyo Co., Ltd. Carburetor utilizing fluidics. 3,690,625, Cl. 261-36.00a.
Ishii, Kenjiro: *See*—
Umeda, Kaoru; Ishii, Kenjiro; and Endo, Hiroshi, 3,690,532.
Isley, Sigmund G.: *See*—
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Isono, Masao; Tomoda, Katsumi; Miyata, Koichi; Maejima, Kazutaka; and Kodama, Reijiro, to Takeda Chemical Industries, Ltd. Method for producing protease. 3,691,014, Cl. 195-62.000.
Isshika, Tomiya: *See*—
Yonemitsu, Eiichi; Isshika, Tomiya; Suzuki, Tsuyoshi; and Sanada, Akihiko, 3,691,232.
Ito, Shoji; Fujioka, Kotaro; Okamoto, Mitsuhiro; and Kikuchi, Tetsuya, to Toray Industries, Inc. Multiple yarn package take-up. 3,690,575, Cl. 242-18.00a.
Itoh, Masaru: *See*—
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Ivanto, Osmo Juhani. Method and distributing objects or goods among a number of consecutively placed points of consumption or storage. 3,690,574, Cl. 241-281.000.
Iwaki, Akio: *See*—
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Iwama, Atsuaki: *See*—
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Iwasaki, Takao: *See*—
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Iwatsu Electric Co., Ltd.: *See*—
Kishi, Hirotoshi, 3,691,391.
Izumi, Yasuhiro. Apparatus for manufacture of non-woven fabric. 3,690,990, Cl. 156-441.000.
Jackson, Bossie, Jr.: *See*—
Kaye, Seymour M.; and Jackson, Bossie, Jr., 3,690,972.
Jackson, Homer E., to Navsat Corporation. Aircraft collision warning system. 3,691,559, Cl. 343-112.00d.
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Heaton, James W.; Eversole, William C.; and Friedline, Ernest J., 3,690,783.

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Kiedrowski, Hugh P.; and Eriksen, Merrill K., to Super Mold Corporation. Matrix selector for tire casings. 3,690,010, Cl. 33-174.00r.

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Knapp, Philip B., to Aptek Industries, Inc. Environmental seed cell. 3,690,034, Cl. 47-57.600.

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Sennewald, Kurt; Erpenbach, Heinz; Vogt, Wilhelm; Lork, Winfried; and Prinz, Peter, 3,691,096.

Knechtel, Wilhelm Josef; and Schaffer, Detlef. Tank filled with developing liquid in electrophotographic apparatus. 3,690,758, Cl. 355-10.000.

Knight, Bruce L., to Marathon Oil Company. Consolidation of unconsolidated formations. 3,690,377, Cl. 166-288.000.

Knight, Warren Nevin Norton: *See—*
Carruthers, John; Knight, Warren Nevin Norton; and Dodwell, Christopher Henry, 3,691,066.

Knirsch, Gunther; and Schmitt, Herrmann, to Brown, Boveri & Cie Aktiengesellschaft. Electrical distributing apparatus protective devices therefor. 3,691,489, Cl. 335-201.000.

Knorr-Bremse GmbH: *See—*
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Knowles, Richard N., to Du Pont de Nemours, E. I., and Company. N-acylcyclohexylamines. 3,691,236, Cl. 260-561.00r.

Kobayashi, Goro; Sugawara, Shinichi; and Nagawa, Masatoshi, to Sankyo Company. 2-Hydroxy-indole-3-dithiocarboxylates. 3,691,199, Cl. 260-326.12r.

Kobayashi, Haruo: *See—*
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Kobayashi, Hiroshi; and Shiba, Sukeyori, to Kabushikikaisha Nippon Recruit Center. Signal responsive control circuit for magnetic recording and reproducing apparatus. 3,691,313, Cl. 179-100.200.

Kobayashi, Hisamine, to Kabushiki Kaisha Shikishima Tipton. Vibration generating device for vibratory machine. 3,691,409, Cl. 310-81.000.

Kobayashi, Wagi; and Narisawa, Fumitugu, to Asahi Carbon Co. Method of preparing carbon black of large particle size and low structure. 3,690,831, Cl. 423-449.000.

Kobetz, Paul; Lindsay, Kenneth L.; and Cook, Shirl E., to Ethyl Corporation. Co-production of alkali metal aluminum tetraalkyls and tetraalkyl lead. 3,691,221, Cl. 260-437.00r.

Koboldt, Melvin A.: *See—*
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Kockum Soderhamn AB: *See—*
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Koehler, Waldemar; and Schecker, Hans-Georg. Manufacture of 1-methyl-3-phenylidanes. 3,691,244, Cl. 260-668.00f.

Koehring-Waterous Ltd.: *See—*
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Koepke, Gunther: *See—*
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Koerner, Gotz, to Goldschmidt, Th., AG. Defoaming emulsion. 3,691,091, Cl. 252-358.000.

Koga, Koichi; Suda, Hideaki; and Akamatsu, Takashi, to Sumitomo Chemical Company, Ltd. Fluoran derivatives for pressure sensitive copying paper. 3,691,203, Cl. 260-335.000.

Kogyo Gijutsuin: *See—*
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Kolaian, Jack H. Heat treatment of oxidized starch. 3,691,155, Cl. 260-233.30r.

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Kolibas, James A., to Addressograph-Multigraph Corporation. Electrostatic conveyor. 3,690,646, Cl. 271-45.000.

Komagata, Hideki: *See—*
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Komamiya, Yasuo: *See—*
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Konishiroku Photo Industry Co., Ltd.: *See—*
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Koons, Albert Eugene. Support frame for use with an infant's car seatbed assembly or as a shoulder supported pack carrier. 3,690,525, Cl. 224-9.000.

Kopicko, Walter J., to Baldwin-Lima-Hamilton Corporation. Multiple fill compacting press. 3,690,805, Cl. 425-352.000.

Koscinski, Anthony: *See—*
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Kotler, Max; and Ravese, Frank E., to DeJur-Amsco Corporation. Feed means for optical display device and control system therefor. 3,690,746, Cl. 352-12.000.

Kottle, Sherman; Carl, William P.; and Vaughn, Walter L., to Dow Chemical Company, The. Continuous optical quality control monitor. 3,690,774, Cl. 356-206.000.

Kovacs, Lloyd, to Midland-Ross Corporation. Extrusion die head with reversed-flow and adjustable-choke structure. 3,690,806, Cl. 425-467.000.

Kozacka, Frederick J., to Chase-Shawmut Company, The. Electric cartridge fuse with external solder joints. 3,691,500, Cl. 337-232.000.

Krafft, Werner; Kruck, Peter; Meyer, Rudolf; and Scheibitz, Maria, to Agfa-Gevaert Aktiengesellschaft. Image receiving layer for the silver salt diffusion process. 3,690,885, Cl. 96-29.00r.

Kraft, Paul; and Brunner, Robert H., to Stauffer Chemical Company. Fire retardant vinyl chloride copolymer latices. 3,691,127, Cl. 260-29.60t.

Kraftco Corporation: *See—*
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Krake, Kenneth V., to Kimberly-Clark Corporation. Method and apparatus for dewatering paper webs. 3,691,010, Cl. 162-206.000.

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Krantz, H.: *See—*
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Kraschnewski, Melvin W.; and Lesniewski, Gerald F., to Bucyrus-Erie Company. Power shovel front end. 3,690,483, Cl. 214-137.000.
Krauss, Rudolf; and Walch, Eugen, to Bosch, Robert, G.m.b.H. Fuel injection valve. 3,690,566, Cl. 239-453.000.
Krekeler, Claude B., to Cincinnati Mine Machinery Co., The. Resilient retaining means for joining work tool and work tool holders. 3,690,728, Cl. 299-92.000.
Kreula, Matti S.: *See—*
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Kriesten, Horst, to Licentia Patent-Verwaltungs G.m.b.H. Apparatus for testing the blade anchorage of turbine blades. 3,690,160, Cl. 73-95.000.
Kripak, Leonid: *See—*
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Kritikos, Athanasios: *See—*
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Krochert, Karl-Heinz, to Roland Offsetmaschinenfabrik Faber & Schleicher AG. Ink fountain roller device for a printing press. 3,690,254, Cl. 101-350.000.
Kroening, Roger D.; and Kirby, David B., to Dow Chemical Company, The. Method of producing clay-base pigment. 3,690,907, Cl. 106-306.000.
Kroger, Bruce G.: *See—*
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Krol, Stanley J., to Malco Manufacturing Company, Inc. Shielded flat cable connector assembly. 3,691,509, Cl. 339-14.00r.
Kroll, Wolfram R.; Doyle, Gerald; and Ruhle, Helmut W., to Esso Research and Engineering Company. Catalyst for olefin reactions. 3,691,095, Cl. 252-428.000.
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Kruger, Joachim; Schabert, Hans-Peter; Schubert, Franz; and Weber, Robert, to Siemens Aktiengesellschaft. Loading device for fuel elements and control rods in a nuclear reactor. 3,691,011, Cl. 176-30.000.
Kubicki, Robert M.: *See—*
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Kuder, Robert C.: *See—*
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Kuder, Robert C.; and Kamal, Marwan R., to General Mills, Inc. Ether diisocyanates. 3,691,223, Cl. 260-453.0ar.
Kuehl, Guenther L.; and Coelln, Axel, to Guenther Systems, Inc. Accumulating conveyor. 3,690,439, Cl. 198-110.000.
Kueneman, Don; and Kenville, Cyril P. Cyratory crusher securing and adjusting mechanisms. 3,690,573, Cl. 241-207.000.
Kuenzler, Howard W., to Massachusetts Institute of Technology. Torsional vibration densitometer. 3,690,147, Cl. 73-32.000.
Kuerzinger, Alfred: *See—*
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Kuisl, Max, to Licentia, Patent-Verwaltungs-G.m.b.H. Method of producing a transistor with an insulated control electrode. 3,690,945, Cl. 117-215.000.
Kukucka, William P.: *See—*
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Kuratle, Hans Rudolf: *See—*
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Kurita, Ken-Ichiro. Filter press with endless filter cloth. 3,690,462, Cl. 210-225.000.
Kurita, Masahiro, to Kabushiki Kaisha Suwa Seikosha. Electric or electronic timepiece. 3,690,058, Cl. 58-23.00r.
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La Flame, Frank E., to General Motors Corporation. Viscous fluid clutch. 3,690,428, Cl. 192-58.00b.
La Valle, Thomas Alvin, to Western Electric Company, Incorporated. Methods of assembling electrical components. 3,689,981, Cl. 29-203.000.
Laerdal, Asmund S. Stretchers. 3,689,945, Cl. 5-82.000.
Lagana, Joseph A., to Chandler Evans Inc. Supersonic diverter. 3,690,337, Cl. 137-81.500.
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Lanahan, John H.; and Abraham, William W., to Mohawk Industrial Laboratories, Inc. Card sorting device. 3,690,457, Cl. 209-80.500.
Land, Edwin H., to Polaroid Corporation. Photographic diffusion transfer color process and composite film unit for use therein. 3,690,879, Cl. 96-3.000.
Land, Karl M., to Cities Service Oil Company. Method and apparatus for well completion explosive stimulation. 3,690,378, Cl. 166-299.000.
Landis, George G.; Parks, John M.; and Brown, Kenneth L., to Lincoln Electric Company, The. Welding electrode with lithium shielding metal. 3,691,340, Cl. 219-146.000.
Landis Tool Company, mesne: *See—*
Price, Ralph E., 3,690,072.
Lane, John H., to United States of America, Army, mesne. Automatic wind direction readout device. 3,690,170, Cl. 73-188.000.
Langendorf, Matthew P., to International Business Machines Corporation. Tone controlled dictation apparatus. 3,691,300, Cl. 179-6.00e.
Langer, Alfred C.: *See—*
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Langley, Robert C., to Engelhard Minerals & Chemicals Corporation. Value metal base electrode coated with $Pb_2Ru_2O_6$ or $Pb_2Ir_2O_6$. 3,691,052, Cl. 204-290.00f.
Lansaque, Rene; and Bonnefond, Georges, to Societe Chimique de Gerland. Gaskets. 3,690,684, Cl. 277-207.000.
Lara, Edwardo D.: *See—*
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Larrison, Spencer Lee. Musical instrument. 3,691,285, Cl. 84-1.160.
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Larsen, Arthur L. Process for regenerating resins of deionization system. 3,691,109, Cl. 260-2.10r.
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Lathery, Willie M.: *See—*
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Lauridsen, Jens Birk: *See—*
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Le Blanc, Placide N. Filler backing. 3,690,084, Cl. 52-514.000.
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Lecinski, Frank H., Jr., to Continental Can Company, Inc. Closure cap and package formed therewith. 3,690,497, Cl. 215-40.000.

Lee, Eugene C.: *See—*
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Lee, Raymond, Organization, Inc., The: *See—*
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Leenaards, Joseph Jacques. Apparatus for the removal of unbroken or insufficiently broken pilferproof rings of screw-caps from the neck of bottles. 3,689,973, Cl. 29-200.00d.
Lees, Ronald D.; and Smith, Ronald W., to Hercules Incorporated. Oil-water separations. 3,691,086, Cl. 252-329.000.
Lefebvre, Leo P.: *See—*
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Lehmann, Herbert G. Quick replacement, slack take-up electric cord for lamps, radios, clocks and the like. 3,691,510, Cl. 339-28.000.
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Leibinsohn, Saul. Venous pressure monometric with level magnifying means. 3,690,312, Cl. 128-205.00d.
Leibson, Mark Lazarevich: *See—*
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Leidholdt, Fritz, to Colgate-Palmolive Company. Method for purifying enzymes. 3,691,015, Cl. 195-66.00r.
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Lemoigne, Pierre Marcel, to Etudes et Fabrication Aeromautiques. Arrangement for increasing the lift and/or sustaining power of sails, and sails including this arrangement. 3,690,603, Cl. 244-145.000.
Leptrone, Samuel. Guide for application of letters or the like to plates. 3,690,013, Cl. 33-184.500.
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Lesavoy, Lawrence, to Glen Creations, Inc. Yarn package support. 3,690,585, Cl. 242-129.800.
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Leverett, Glenn Frederick, to Du Pont de Nemours, E. I., and Company. Granular polytetrafluoroethylene of good moldability and apparent bulk density. 3,690,569, Cl. 241-17.000.
Lewis, Donald E.; and Biesecker, Douglas A. Pilot-operated valves. 3,690,616, Cl. 251-38.000.
Lewis, Leo J.; Lewis, William L.; and Lewis, Mark T. Trellis arm post. 3,690,033, Cl. 47-46.000.
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Lichtenstein, Bernard; and Kroger, Bruce G. Means and method for detection of glaucoma. 3,690,158, Cl. 73-80.000.
Lieberman, Morton L., to Corning Glass Works. Method of making photochromic films on glass substrates. 3,691,045, Cl. 204-192.000.
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Lin, Chu Siung. Cigarette holder. 3,690,329, Cl. 131-201.000.
Lincoln, Clark, to General Motors Corporation. Vehicle body passive occupant restraining arrangement. 3,690,696, Cl. 280-150.0sb.
Lincoln Electric Company, The: *See—*
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Lind, Le Roger J., to Westinghouse Electric Corporation. Spring plate sealing system. 3,690,785, Cl. 415-108.000.
Lindboe, Clifford L., to Lyon, Ross W., Lyon, Rosclare M., Lyon, Robert E.; d/b/a and Lyon Industries. Relief valve for oil filters or the like. 3,690,460, Cl. 210-130.000.
Lindner, Robert G.: *See—*
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Link, Martin, to Johnson & Johnson. Container for flowable contents. 3,690,523, Cl. 222-538.000.
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Lipscomb, George Winfred, to Westinghouse Electric Corporation. Meter reading system having digital encoder. 3,691,547, Cl. 340-204.000.
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Spangler, Earl G., 3,690,904.
Lockwood, Lawrence S., to Universal Oil Products Company. Reactor for fluidized particles with adjustable level weir to particle outlet. 3,690,842, Cl. 23-288.00s.
Loft, John T.; Plovan, Steven G.; and Vogt, Clifford M., to Celanese Corporation. Method for making air-permeable waterproof products having fabric-like aesthetic properties. 3,690,977, Cl. 156-167.000.
Logan, Ted Joe: *See—*
Wann, Robert Earl; Nicholson, Denzel Allan; and Logan, Ted Joe, 3,691,077.
Logvinenko, Dmitry Danilovich. Method of producing metal-polymer compositions. 3,691,130, Cl. 260-41.00b.
Lolkema, Jan: *See—*
Dolfing, Thale; and Lolkema, Jan, 3,690,107.
Lone Star Steel Company: *See—*
Patterson, Billy R., 3,690,348.
Loned, Aldo, to U.S. Philips Corporation, mesne. Dry shave appliances. 3,690,000, Cl. 30-34.100.
Long, Dorothy Dolores. Long shoulder pad. 3,690,211, Cl. 84-280.000.
Long, James A.: *See—*
Pittman, Carl R.; and Long, James A., 3,691,298.
Long, Robert G.: *See—*
Huebner, Werner P. E.; and Long, Robert G., 3,691,304.
Huebner, Werner P. E.; and Long, Robert G., 3,691,305.
Lonza Ltd.: *See—*
Boosen, Karl-Josef, 3,691,171.
Looschen, Floyd W., to Burroughs Corporation. Electronic keyboard. 3,691,555, Cl. 340-365.000.
L'Oreal: *See—*
Marcarian, Jean Hrand; and Clemencet, Roland Louis Julien, 3,691,273.
Lork, Winfried: *See—*
Sennewald, Kurt; Erpenbach, Heinz; Vogt, Wilhelm; Lork, Winfried; and Prinz, Peter, 3,691,096.
Loscalzo, Nicholas R.: *See—*
Fishman, Murray, 3,691,118.
Lotti, Louis B.: *See—*
Hocking, Loren P.; and Lotti, Louis B., 3,691,522.
Louage, Francois: *See—*
Gabillard, Robert; Louage, Francois; and Desbrandes, Robert, 3,690,164.
Louzos, Demetrios V., to Union Carbide Corporation. Lead fibers useful for galvanic cell electrodes. 3,690,866, Cl. 75-.500.
Lovelock, James E., to California Institute of Technology. Method and apparatus for analyzing gaseous chromatographic effluents. 3,690,835, Cl. 23-232.00c.
Low, David N., to Du Pont de Nemours, E. I., and Company. Scrubbing of gases containing $TiCl_4$. 3,690,041, Cl. 55-71.000.

Loy, George W., to Scio Cabinet Company. Plastic laminating apparatus. 3,690,995, Cl. 156-478.000.

Loyau, Guy: *See—*
Roiron, Jean-Pierre Louis; and Loyau, Guy, 3,691,341.

Lozano, Gustavo Jimenz; Bosisto, Carlos Alberto; and Weinbaum Alejan Dro Sise. Extractor for dental crowns and bridges. 3,690,006, Cl. 32-43.000.

LTV Aerospace Corporation: *See—*
Askew, William J., 3,691,400.
Billingsley, James D., 3,690,233.

Lu, Sun: *See—*
Jones, Derick; and Lu, Sun, 3,690,745.

Luborsky, Fred E.; and Skoda, Raymond E., to General Electric Company. Permalloy film plated wires having superior non-destructive read-out characteristics and method of forming. 3,691,032, Cl. 204-40.000.

Lucas, Joseph, (Industries) Limited: *See—*
Munby, Harry, 3,690,096.
Ormskirk, Leonard William Eyles, 3,690,098.

Lucas, Robert Armistead: *See—*
Blatter, Herbert Morton; and Lucas, Robert Armistead, 3,691,180.

Lucas, Robert Armistead; and Blatter, Herbert Morton, to Ciba Corporation. Cycloalkano [c]pyrazole-3-acids. 3,691,179, Cl. 260-295.500.

Lucerne Products, Inc.: *See—*
Matthews, Benjamin H., 3,691,322.

Luckey, Manley J. Apparatus for universal blood alcohol determination. 3,690,838, Cl. 23-254.00r.

Ludt, William C.: *See—*
Jones, John T.; Ludt, William C.; and Kellogg, Hudson W., 3,690,851.

Luedeman, Robert T.; and Troeger, Walter Alvin, to Weston Instruments Division. Thermoelectric converters and method of making same. 3,690,955, Cl. 136-226.000.

Lugli, Giuseppe: *See—*
Barassi, Carlo; Lugli, Giuseppe; Mezzanotte, Mario; and Guermandi, Romano, 3,690,364.

Lugo, Roberto. Adjustable depth groove cutter and support therefor. 3,690,357, Cl. 144-232.000.

Lugscheider, Walter, to Siemens Aktiengesellschaft. Method of applying a niobium layer to a copper carrier by electrolytic deposition from fused salts. 3,691,031, Cl. 204-39.000.

Lummus Nederland N.V.: *See—*
Schoonman, Willem; and Oey, Djin Kian, 3,690,505.

Lumney, Frank B.; and Eberhardt, Ronald P., to Wurlitzer Company, The. Electromechanical selector unit. 3,690,680, Cl. 274-10.00d.

Lunde, George G., to Minnesota Mining and Manufacturing Company. Photographic film duplicator. 3,690,766, Cl. 355-111.000.

Lunn, Mark Lawrence: *See—*
Juroff, Lyle Bruce; and Lunn, Mark Lawrence, 3,691,444.

Lupica, Sebastian B.: *See—*
Zittel, Herman E.; Lupica, Sebastian B.; and Bate, Lamont C., 3,691,084.

Luthi, Oscar; and Schleinkofer, Rudi W., to Improved Machinery Inc. Fluid suspension apparatus for disintegrating and separating material. 3,690,571, Cl. 241-46.00r.

Luvisotto, Roy G.: *See—*
Bokovoy, Ronald D.; and Luvisotto, Roy G., 3,690,399.

Lyghounis, Evangelo: *See—*
Cicognani, Enrico; and Lyghounis, Evangelo, 3,691,471.

Lynch, Charles L., to United States of America, Army. Ground for fiberglass solid rocket motor case. 3,690,101, Cl. 60-255.000.

Lyon Industries: *See—*
Lindboe, Clifford L., 3,690,460.

Lyon, James L.: *See—*
Bnaks, Willard K.; and Lyon, James L., 3,690,760.

Lyon, Robert E.; d/b/a: *See—*
Lindboe, Clifford L., 3,690,460.

Lyon, Rosclare M.: *See—*
Lindboe, Clifford L., 3,690,460.

Lyon, Ross W.: *See—*
Lindboe, Clifford L., 3,690,460.

M & T Chemicals Inc.: *See—*
Eppensteiner, Frederick Walter; and Woehrle, Richard E., 3,691,049.

Macalalad, Fidel Villaluna: *See—*
Chittenden, Richard Marion; Whitton, Alden William; Macalalad, Fidel Villaluna; Massman, Richard; and Wilson, Earl David, 3,690,315.

MacColl, Donald; and O'Pray, Hugh, to Imperial Chemical Industries Limited. Electrical heating sheet with series of eyelets connections. 3,691,349, Cl. 219-549.000.

Machleidt, Hans: *See—*
Ohnacker, Gerhard; Daniel, Helmut; and Machleidt, Hans, 3,691,173.

Macpherson, Duncan H., to Western Gear Corporation. Self-energizing retractable powered drive roller assembly. 3,690,440, Cl. 198-127.00r.

Madden, Norman W.: *See—*
Giles, Walter W.; and Madden, Norman W., 3,691,342.

Maeda, Hiroshi; Hasegawa, Koichi; Sekiguchi, Hisashi; and Hayakawa, Fumio, to Dainippon Ink and Chemicals Incorporated. Process for the preparation of halohydrin esters. 3,691,228, Cl. 260-468.00r.

Maejima, Kazutaka: *See—*
Isono, Masao; Tomoda, Katsumi; Miyata, Koichi; Maejima, Kazutaka; and Kodama, Reijiro, 3,691,014.

Magee, Kenneth L., to Case, J. I., Company. Angle and tilt mechanism for dozer blade. 3,690,386, Cl. 172-304.000.

Magna Corporation: *See—*
Blair, Charles M., Jr., 3,690,857.

Magne, Frank C.: *See—*
Mod, Robert R.; Magne, Frank C.; and Skau, Evald L., 3,691,158.

Mago, Brij Mohan; and Bruton, James Isaac, to Allied Chemical Corporation. High strength polyethylene terephthalate yarn and cord produced therefrom. 3,690,362, Cl. 152-359.000.

Mahe, Yves; Letourneur, Gilbert; and Devillas, Jean-Luc, to La Cellophane, Societe Anonyme. Coating process for regenerated cellulose film. 3,690,910, Cl. 117-7.000.

Maier, Robert E., Jr.; McGinnis, Joseph P.; and Simon, Paul R., to Harris-Intertype Corporation. Method and apparatus for feeding sheet material into a hopper. 3,690,650, Cl. 271-89.000.

Maijers, Andries Cornelis; and Ketel, Jacob, to U.S. Philips Corporation. Electrical circuit element having a diagonal abutment strip, and method of manufacturing the same. 3,691,436, Cl. 317-261.000.

Maillard, Bernard. Breech mechanism for automatic or semi-automatic guns. 3,690,218, Cl. 89-185.000.

Main, George; and Jahnke, Robert E., to Republic Steel Corporation. Apparatus for processing coiled tubing having turns prebent to varying radii of curvature. 3,690,288, Cl. 118-6.000.

Malco Manufacturing Company, Inc.: *See—*
Krol, Stanley J., 3,691,509.

Malcolm, Bruce G. Multi-diode single-cavity microwave oscillators. 3,691,479, Cl. 331-107.000.

Malley, Frank, to Unilex, Inc. Dual photoconductive cell photometer. 3,690,773, Cl. 356-181.000.

Malley, William G.; and Cayton, David W., to International Business Machines Corporation. Soil molding harvester pickup. 3,690,383, Cl. 171-126.000.

Mallory, P. R., & Co., Inc.: *See—*
Puerner, George O., 3,691,504.

Manhart, Sigmund: *See—*
Erben, Klaus Dieter; Kroy, Walter; Manhart, Sigmund; and Mehnert, Walter E., 3,691,539.

Mankovitz, Roy J., to Teledyne, Inc. Current limiter responsive to current flow and temperature rise. 3,691,426, Cl. 317-23.000.

Mann, Adriaan B.: *See—*
Van de Belo, Roelof; Begemann, Heinrich K. S. P.; Bos, Hendrikus J.; and Mann, Adriaan B., 3,690,389.

Manning, Maurice, to Medical College of Ohio, The. (4-L-Threonine)-oxytocin. 3,691,147, Cl. 260-112.500.

Mansfield, Michael Patrick; and Prangnell, Howard John, to Cossor, A. C., Limited. Demodulating apparatus. 3,691,467, Cl. 325-363.000.

Maran, Mario: *See—*
Sturmo, Giuseppe; and Maran, Mario, 3,690,165.

Marathon Oil Company: *See—*
Knight, Bruce L., 3,690,377.
Turzillo, Lee A., 3,690,109.

Marcarian, Jean Hrand; and Clemencet, Roland Louis Julien, to L'Oreal. Liquid cosmetic product for filling applicator appliances and its method of preparation. 3,691,273, Cl. 424-63.000.

Marco, John L.; and Saxe, Irving Henry. Douche bag. 3,690,319, Cl. 128-251.000.

Mard, Kenneth C. Vibration isolation system. 3,690,607, Cl. 248-20.000.

Mark Products, Inc.: *See—*
Evans, John S., Jr.; and Jasper, Leslie L., 3,690,487.

Markakis, Costas E. Stabilized floating structure. 3,689,953, Cl. 14-27.000.

Marker, Hannes, to Toe-or heel-holding device for safety ski. bindings. 3,690,690, Cl. 280-11.35t.

Markley, Jeffry V.: *See—*
Ebner, Craig E.; and Markley, Jeffry V., 3,691,546.

Marschall, Peter. Code converters. 3,691,554, Cl. 340-347.0dd.

Marsh, Jean S.: *See—*
Marsh, John, 3,690,602.

Marsh, John; deceased (by Marsh, Jean S.; administratrix), to United Aircraft Corporation. Automatic cargo release mechanism. 3,690,602, Cl. 244-137.00r.

Marshall, Michael Charles: *See—*
Thompson, Eric William; and Marshall, Michael Charles, 3,691,081.

Marshman, Graham Edward, to Muirhead Limited. Synchronizing arrangement for a motor driven facsimile scanning assembly. 3,691,296, Cl. 178-69.50e.

Martin, Robert Bruce: *See—*
Matson, Carl G.; and Martin, Robert Bruce, 3,690,620.

Martin, Roger: *See—*
Wells, Frank Herbert; and Martin, Roger, 3,690,154.

Marumoto, Ryuji; Yoshioka, Yoshio; Aoki, Hisashi; and Toda, Jun, to Takeda Chemical Industries, Ltd. Seasoning compositions containing 2-(lower-alkoxy) inosine-5'-phosphates. 3,690,900, Cl. 99-140.00n.

Mason, Ralph B.: *See—*
Hamner, Glen P.; and Mason, Ralph B., 3,691,058.

Massachusetts Institute of Technology: *See—*
Kleppner, Daniel, 3,691,381.
Kuenzler, Howard W., 3,690,147.

Massar, Ernst; and Voigt Hans, to Siemens Aktiengesellschaft. Superconductive switching path for heavy current. 3,691,491, Cl. 335-216.000.

Massey-Ferguson G.m.b.H.: *See—*
Wenzel, Alfred Johannes; and Hantel, Alwin, 3,690,359.

Massey-Ferguson Services N.V.: *See—*
VanDest, Jean Claude, 3,690,734.

Massman, Richard: *See—*
Chittenden, Richard Marion; Whitton, Alden William; Macalalad, Fidel Villaluna; Massman, Richard; and Wilson, Earl David, 3,690,315.

Matay, Inc., to TRW Inc. Ultrasonic distance amplitude correction unit. 3,690,153, Cl. 73-67.80r.

Mathe, Tibor: *See—*
Csuros, Zoltan; Petro, Jozsef; Tungler, Antal; Mathe, Tibor; and Bekassy, Sandor, 3,691,103.

Matossi, Dario: *See—*
H oward, Donald Kearey; Thomas, Brian Martin; Popplewell, Alan Francis; and Matossi, Dario, 3,691,033.

Matson, Carl G.; and Martin, Robert Bruce. Road marker, temporary barricade or the like. 3,690,620, Cl. 256-64.000.

Matsui, Isao; Minamikawa, Yoshihisa; Katagiri, Shinjiro; and Nakahara, Teruo. Automatic control system for varying a D.C. high voltage for accelerating tube of electron microscope and the like. 3,691,377, Cl. 250-49.50a.

Matsui, Kazuma; and Tsubouchi, Hideo, to Nippondenso Kabushiki Kaisha. Fluidic control system of fuel injection device for internal combustion engines. 3,690,306, Cl. 123-119.00r.

Matsumoto, Hirosi: *See—*
Nishizawa, Hirofumi; Kitaura, Shigeo; Sumoto, Misao; Komagata, Hideki; and Matsumoto, Hirosi, 3,690,978.

Matsuo, Masaharu. Sheet feeding apparatus. 3,690,647, Cl. 271-49.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
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Mattel, Inc.: *See—*
Garcia, Armando J.; Gunther, Gregory M.; and Villanueva, Juanito O., 3,690,030.

Matthews, Benjamin H., to Lucerne Products, Inc. Reversing switch. 3,691,322, Cl. 200-1.00v.

Matthews, Jamie F., Jr., to Esso Production Research Company. Offshore pipeline installation method. 3,690,111, Cl. 61-72.300.

Matzuk, Alexander R.: *See—*
Shen, Tsung-Ying; Matzuk, Alexander R.; and Dorn, Conrad P., Jr., 3,691,193.

Maus, Fritz: *See—*
Herzhoff, Peter; Platz, Stephan; Gref, Hans; Schwenger, Willi; Maus, Fritz; Schweicher, Wolfgang; Koepke, Gunther; Wasser, Willi; and Browatzki, Kurt, 3,690,917.

Maxwell, Donald L., to General Mills, Inc. Process for forming a multi-colored food product. 3,690,896, Cl. 99-81.000.

Mayer, Dietmar: *See—*
Scheibitz, Maria; Von Konig, Anita; Kampfer, Helmut; Mayer, Dietmar; Sasse, Klaus; Kolb, Gunter; Honig, Hans Ludwig; and Meiser, Werner, 3,690,884.

Mayer, Jurgen: *See—*
Futterer, Bodo; Stemme, Otto; and Mayer, Jurgen, 3,690,043.

Maynard, Baylor H., Jr., to Versadome Corporation. Modular tubular-skeleton building adapted to be readily assembled and disassembled and re-assembled. 3,690,078, Cl. 52-86.000.

Mayo, Alfred M. Rail suspension arrangement. 3,690,266, Cl. 104-123.000.

Mayyar Tudomanyos Akadenia: *See—*
Csuros, Zoltan; Petro, Jozsef; Tungler, Antal; Mathe, Tibor; and Bekassy, Sandor, 3,691,103.

Maze, Glenn W.: *See—*
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Mc Clure, James D.: *See—*
Herrington, Francis Walter; and Mc Clure, James D., 3,690,648.

Mc Fadyen, Robert J. Low level an detector and automatic gain control network. 3,691,465, Cl. 325-319.000.

Mc Lean, Robert E., to Rival Manufacturing Company. Electric can opener with removable hand lever and frame engaging pin assembly. 3,689,997, Cl. 30-4.00r.

Mc Millen, Bobby E., to AMBAC Industries, Incorporated. Engine starter drive assembly. 3,690,188, Cl. 74-7.00r.

Mc Nabney, John C., to Trane Company, The. Air distribution control. 3,690,548, Cl. 236-1.00c.

Mc Namara, Thomas F.; and Winer, Richard A., to Warner-Lambert Company. Diagnostic method for periodontal disease. 3,691,018, Cl. 195-103.50r.

McAlister, Donald R.: *See—*
Kircher, Charles E., Jr.; McAlister, Donald R.; and Brothers, Doris Le Roy, 3,691,240.

McBratnie, Karen Ann, to Hueschen, Gordon. Instructional device for children with learning disabilities. 3,690,020, Cl. 35-37.000.

McCabe, Francis J. Press. 3,690,207, Cl. 83-627.000.

McCafferty, Robert F.; and Riggle, Gerald D., to Akron Standard, division of Eagle-Picher Industries, Inc. Tire bead handling apparatus. 3,690,989, Cl. 156-403.000.

McCain, Samuel B., to Vertecs Corporation, Inc. Combined froth-pour spray system for resin foam. 3,690,556, Cl. 239-112.000.

McCann, Thomas J., to Argus Chemical Corporation. Process for the preparation of acyl chlorides and benzaldehydes. 3,691,217, Cl. 260-408.000.

McCaully, Ronald J.; and Bell, Stanley C., to American Home Products Corporation. Preparation of N-substituted 2-aminophenyl aryl ketone. 3,691,235, Cl. 260-545.00r.

McClain, Douglas; and Osborn, Lemuel E., to Relax-O-Lounger, Inc. Reclining chair construction. 3,690,723, Cl. 297-85.000.

McClamrock, Grady L., to Western Electric Company, Incorporated. Process of assembling solid electrolytic capacitors using vibration step with both low and high frequency components. 3,689,989, Cl. 29-570.000.

McClellan, Rudolph M., Jr.: *See—*
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McClellan, Rudolph M., Sr.; and McClellan, Rudolph M., Jr. Vehicle speed indicator system. 3,691,525, Cl. 340-62.000.

McCombs, Howard L., Jr. Afterburner fuel manifold flow sensor and igniter control. 3,690,094, Cl. 60-39.82r.

McCormick, Harold E.: *See—*
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McCoy, Charles S.: *See—*
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McGarvey, Robert G.: *See—*
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McGinnis, Joseph P.: *See—*
Maier, Robert E., Jr.; McGinnis, Joseph P.; and Simon, Paul R., 3,690,650.

McGinnis, Philip Roswell; and O'Brien, Gerald Joseph, to Du Pont de Nemours, E. I., and Company. Permeation separation element. 3,690,465, Cl. 210-321.000.

McGraw-Edison Company: *See—*
Gaven, Thomas J.; and Whitlock, Bruce N., 3,690,678.
Zwelling, Martin I.; and Russell, Robert W., 3,691,498.

McIntosh, Duane E., to General Motors Corporation. Method and apparatus for decoding digital information. 3,691,553, Cl. 340-347.0dd.

McIntosh, Michael D., to Litton Industries, Inc. Positioning control system having memory for a machine tool. 3,691,357, Cl. 235-151.110.

McKay, Robert Bruce, to Ciba-Geigy AG. Synthetic resin compounds of the phthalocyanine series. 3,691,116, Cl. 260-18.00n.

McKinnon, Murdoch G.; Wilson, James N.; and Besant, Robert W., to Atomic Energy of Canada Limited. Fluidic position sensor. 3,690,339, Cl. 137-81.500.

Mead, Dennis E. Inserter for putting objects in moving holes. 3,690,436, Cl. 198-22.000.

Meadows, James Lawson: *See—*
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Medical College of Ohio, The: *See—*
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Meiser, Werner: *See—*
Scheibitz, Maria; Von Konig, Anita; Kampfer, Helmut; Mayer, Dietmar; Sasse, Klaus; Kolb, Gunter; Honig, Hans Ludwig; and Meiser, Werner, 3,690,884.

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Melnick, Irving E.: *See—*
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Melreit, Robert V., to Royal Appliance Manufacturing Co., Inc. Suction cleaner shag rug nozzle convertor. 3,689,956, Cl. 15-397.000.

Memco (Electronics) Limited: *See—*
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Menasco Manufacturing Company: *See—*
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Menicks, Paul R.: *See—*
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Menke, Joseph F., to Eltro GmbH., Co. Method and apparatus for the determination of coordinates. 3,690,594, Cl. 244-3.130.

Mennen-Greatbatch Electronics, Inc.: *See—*
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Merck & Co., Inc.: *See—*
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Merkel, Hans; and Leibenzeder, Siegfried, to Siemens Aktiengesellschaft. Method of producing highly pure, particularly silicon free gallium arsenide. 3,690,847, Cl. 23-294.000.

Merkley, Joseph H.: *See—*
Kamienski, Conrad W.; and Merkley, Joseph H., 3,691,241.

Merrell, Richard G.; and Hendrickson, Melvin C., to Zenith Radio Corporation. Synchronization phase-lock system for a digital vertical synchronization system. 3,691,297, Cl. 178-69.5tv.

Mertzweiller, Joseph K.; and Cull, Neville L., to Esso Research and Engineering Company. High activity zeolite catalysts and their preparation. 3,691,101, Cl. 252-455.00f.

Mervis, Lawrence J.: *See—*
Wortman, Donald E.; and Mervis, Lawrence J., 3,690,323.

Messer, Thomas V. Combined brush and comb. 3,690,331, Cl. 132-120.000.

Messerly, Alfred E. Polyurethane compositions of matter and methods of manufacture. 3,691,117, Cl. 260-18.0tn.

Messerschmitt-Bolkow-Blohm GmbH: *See—*
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Erben, Klaus Dieter; Kroy, Walter; Manhart, Sigmund; and Mehnert, Walter E., 3,691,539.

Messina, Joseph F.; and Gisser, Henry, to United States of America, Army. Extreme pressure, rust preventive nonreactive greases. 3,691,074, Cl. 252-25.000.

Metallgesellschaft A.G.: *See—*
Sibakin, Jaroslaw George; Roeder, Gordon Alan; and Hookings, Paul Henry Heathcote, 3,690,867.

Metelski, Jan: *See—*
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Meyer, Rudolf: *See—*
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Meyers, George Leroy, to American Can Company, Inc. Reducible, reclosable carton. 3,690,544, Cl. 229-51.0tc.

Mezey, Frank G. J., to American Technical Ceramics; a division of Phase Industries Inc. High temperature variable capacitor. 3,691,434, Cl. 317-243.000.

Mezzanotte, Mario: *See—*
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Mica Corporation, The: *See—*
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Michaud, Jimmie A., to Bendix Corporation, The. Multimode counting device. 3,691,353, Cl. 235-92.0ev.

Michigan Technological University, Board of Control: *See—*
Santeford, Henry S., Jr.; Meier, John G.; and Alger, George R., 3,690,169.

Middleton, Edward B. Container including a rotable spherical valve with ring drive gear teeth. 3,690,521, Cl. 222-507.000.

Middleton, William J., to Du Pont de Nemours, E. I., and Company. 2,2,5,5-Tetrakis(polyhalomethyl)-4-oxazolidinone herbicides. 3,690,862, Cl. 71-88.000.

Midland Silicones Limited: *See—*
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Midland-Ross Corporation: *See—*
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Midwestern Specialties Ltd.: *See—*
Poore, Earnest C.; and Goforth, John A., Jr., 3,690,472.

Miguel, Marvin E. Bale handling device. 3,690,473, Cl. 214-6.00b.

Mikuni Kogyo Co., Ltd.: *See—*
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Milianowicz, Stanislaw A.: *See—*
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Miller, Alfred H., to Esso Research and Engineering Company. N-halo-N-phenyl-N'N'dimethylformamidinium halides. 3,691,237, Cl. 260-564.00r.

Miller, Forbes M.: *See—*
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Bredzs, Nikolajs; and Miller, Forbes M., 3,690,875.

Miller, Franklyn D.: *See—*
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Miller, Harry, to Sperry Rand Corporation. Speed command and throttle control system for aircraft. 3,691,356, Cl. 235-150.220.

Miller, Herbert Boyd, 10% to Lee, Raymond, Organization, Inc., The. Portable hunting blind. 3,690,334, Cl. 135-1.00r.

Miller, Mark A. Panel mounting construction. 3,690,083, Cl. 52-481.000.

Miller, Victor R.: *See—*
Weppner, Benjamin H.; Lefebvre, Leo P.; and Miller, Victor R., 3,690,313.

Miller, Warren J., to Eastman Kodak Company. Photographic element and process. 3,690,918, Cl. 117-34.000.

Millman, William V., to Bendix Corporation, The. Sonic nebulizer. 3,690,317, Cl. 128-194.000.

Mills, Brian Edward: *See—*
Edstrom, John Olof; Innerman, Sven Eric; Berg, Bengt Henrik; and Mills, Brian Edward, 3,690,850.

Milward, Gilbert Harold, to Bardic Systems Limited. Automatic battery charging systems for a variable load. 3,691,448, Cl. 326-39.000.

Minamikawa, Yoshihisa: *See—*
Matsui, Isao; Minamikawa, Yoshihisa; Katagiri, Shinjiro; and Nakahara, Teruo, 3,691,377.

Minarik, Ronald W.: *See—*
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Minolta Camera Kabushiki Kaisha: *See—*
Kushima, Teizo; Tanaka, Susumu; and Ogawa, Masaya, 3,690,759.
Umeda, Kaoru; Ishii, Kenjiro; and Endo, Hiroshi, 3,690,532.
Yamashita, Maki; and Kobayashi, Haruo, 3,690,228.

Mintz, Beatrice, to Institute for Cancer Research, The. Method of bioassay of fertility and contraceptive drugs. 3,690,310, Cl. 128-2.00r.

Mischek, Hugo, to Siler AG. Vehicle for transporting containerized freight. 3,690,489, Cl. 214-390.000.

Missio, Danilo V.; Wollman, Herbert; and Englander, Irving G., to Systron-Donner Corporation, mesne. Optical tanker-docking system. 3,690,767, Cl. 356-5.000.

Misuno, Komei: *See—*
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Mitchell, Robert W. Apparatus for computing color balance characteristics and preparing improved color prints. 3,690,763, Cl. 355-88.000.

Mitrofanov, Jury Eremeevich: *See—*
Bekhtle, Georgy Alexandrovich; Myasnikov, Nikolai Fedorovich; Mitrofanov, Jury Eremeevich; Berestov, Evgeny Stepanovich; Kauvasinsky, Albert Frantsevich; Leibson, Mark Lazarevich; and Derkach, Viktor Gershovich, 3,690,454.

Mitsubishi Edogawa Kagaku Kabushiki Kaisha: *See—*
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Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See—*
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Mitsui Shipbuilding and Engineering Co., Ltd.: *See—*
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Mitsuoka, Takeshi: *See—*
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Mittnacht, Hans; and Priebe, Edmund. Impact resistant thermoplastic composition. 3,691,260, Cl. 260-876.00r.

Miyagawa, Takashi: *See—*
Yokota, Yoshiyuki; Miyagawa, Takashi; Tanaka, Yasuto; and Torii, Tatuki, 3,690,929.

Miyake, Toshio: *See—*
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Miyazaki, Gentaro: *See—*
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Mize, Jack P., to Texas Instruments, Incorporated. Surface acoustic wave generating system. 3,691,406, Cl. 307-308.000.

Mobil Oil Corporation: *See—*
Horodysky, Andrew G., 3,691,220.

Mobile Aerial Towers: *See—*
Myers, Lester L., 3,690,693.

Moch, Irving, Jr.: *See—*
Frank, Herman J.; and Moch, Irving, Jr., 3,691,093.

Mod, Robert R.; Magne, Frank C.; and Skau, Evald L. Hexachloropentadiene adducts of unsaturated amides of azabicyclononane. 3,691,158, Cl. 260-239.0ba.

Modine Manufacturing Company: *See—*
Mosier, James A.; and Dolister, Harold H., 3,689,972.

Moe, Fred L. Machine tool. 3,690,687, Cl. 279-4.000.

Mohawk Industrial Laboratories, Inc.: *See—*
Lanahan, John H.; and Abraham, William W., 3,690,457.

Moisio, Tauno V.; and Kreula, Matti S., to Valio Meiyierien Keskusosuusliike. Measuring method for analyzing material containing fat and water. 3,691,455, Cl. 324-.50r.

Mokaoam, Raghunath G., to Institute of Gas Technology. Gas cooling process and apparatus. 3,690,113, Cl. 62-6.000.

Mole, Robert F.: *See—*
Decker, Robert W.; and Mole, Robert F., 3,690,468.

Molo, Francesco; and Giacometti, Alberto. Apparatus and process for detecting malfunction in a frequency division multiplex system. 3,691,306, Cl. 179-15.0bf.

Monaco, Alfred; and Monaco, Arthur L., to Moser Box Partition Co., Inc. Box partition assembly machine. 3,690,225, Cl. 93-37.00r.

Monaco, Arthur L.: *See—*
Monaco, Alfred; and Monaco, Arthur L., 3,690,225.

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Montague Machine Company: *See—*
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Montesdioca, Renaldo, to Bellon Plumbing Company, Incorporated. Pipe bracket. 3,690,609, Cl. 248-68.00r.
Moore, Charles H. Connection assembly for fluid pressure lines. 3,690,702, Cl. 285-156.000.
Moore, Thomas. Excessive motor load indicator and voltage cut-out device. 3,691,445, Cl. 318-472.000.
Moreland, James B. Cable operated article releaser. 3,690,430, Cl. 194-94.000.
Morgan, Bert B.; and Schroeder, George F., to Northrop Carolina, Inc. Textile thread winder with grooved drive roll. 3,690,578, Cl. 242-18.0dd.
Mori, Chiharu; and Ota, Katsumi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Electronic circuits for automatic camera controls. 3,690,230, Cl. 95-10.0ct.
Mori, Toshiyuki, to Olympus Optical Co., Ltd. Endoscope with built-in oximeter. 3,690,769, Cl. 356-41.000.
Morissette, Bertrand G.: *See—*
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Moriya, Mikio: *See—*
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Morris, Harold D. Sensing mechanism for linear servo accelerometer. 3,690,187, Cl. 73-512.00b.
Morris, Herbert C.: *See—*
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Morris, Jack, to Olin Corporation. Forming mill guides. 3,691,337, Cl. 219-8.500.
Morris, Louis P.: *See—*
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Morris, Raymond J. T., to Dunlop Holdings Limited. Method of bonding polypropylene or a copolymer of ethylene and propylene to an elastomer. 3,690,925, Cl. 117-76.00t.
Morse, John B., to Polaroid Corporation. Plug and socket assemblies for flash cubes. 3,691,508, Cl. 339-45.00t.
Morton International, Inc.: *See—*
Orelup, Richard B., 3,690,809.
Mory, Rudolf: *See—*
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Mosby, William Lindsay, to American Cyanamid Company. Cyanmino-dithiole-dicarboxylic esters. 3,691,201, Cl. 260-327.00m.
Moser Box Partition Co., Inc.: *See—*
Monaco, Alfred; and Monaco, Arthur L., 3,690,225.
Moser, Gottfried: *See—*
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Moser, Raymond L., to Caterpillar Tractor Company. Tree harvester control circuit. 3,690,354, Cl. 144-34.00r.
Mosier, James A.; and Dolister, Harold H., to Modine Manufacturing Company. Method of fabricating a heat exchanger. 3,689,972, Cl. 29-157.30r.
Motorola, Inc.: *See—*
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Huber, William B., 3,690,198.
Jarvela, Gary Nicholas; and Klink, Howard Nassime, 3,690,290.
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Moulson, Donald C.: *See—*
Murray, Donald R.; Van Soest, Cornelius J. M.; and Moulson, Donald C., 3,690,412.
Mouri, Katsuo; Miyazaki, Gentaro; and Nabeyama, Hiroaki, to Hitachi, Ltd. Voltage controlled oscillator. 3,691,475, Cl. 331-8.000.
Moustafa, Troidorf: *See—*
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Moyer, Rudolph H.: *See—*
Witz, Samuel; Carleton, Lee T.; Anderson, Howard H.; Moyer, Rudolph H.; and Neufeld, Harold A., 3,690,837.
Mrugala, Theodore A., to Warner & Swasey Company, The, mesne. Grinding wheel guard. 3,690,074, Cl. 51-269.000.
MTS Systems Corporation: *See—*
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Muckelroy, William L.: *See—*
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Mueller, David E.; and Segura, Marnell A., to Esso Research and Engineering Company. Method of protecting reduced iron ore by coating. 3,690,930, Cl. 117-100.00b.
Mueller, Francis E., to International Business Machines Corporation. Positioning system including servo track configuration and associated demodulator. 3,691,543, Cl. 340-174.10b.
Mueller, Thomas L.,: *See—*
Gutmann, Paul F., Jr.; and Mueller, Thomas L.,, 3,690,270.
Mueller, Willy; Ronco, Karl; and Mory, Rudolf, to Ciba-Geigy AG. Disazo pigments. 3,691,149, Cl. 260-174.000.
Muhlemann, Ernst; and Bruun, Jean Eskild, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Gas-operated automatic firearm having thermal firing rate control. 3,690,219, Cl. 89-193.000.
Muirhead Limited: *See—*
Marshman, Graham Edward, 3,691,296.
Mullen, John S., to Esso Research and Engineering Company. Pipe line leak detection and location system. 3,690,150, Cl. 73-40.50r.
Muller, Hans, to Grapha Maachinefabrik Hans Muller A.G. Variable speed drive mechanism. 3,690,208, Cl. 83-643.000.
Muller, Karl: *See—*
Hutz, Gerhard; and Muller, Karl, 3,690,801.
Muller, Walter, to Transformatoren Union Aktiengesellschaft. Choke. 3,691,492, Cl. 336-60.000.
Munby, Harry, to Lucas, Joseph, (Industries) Limited. Igniter arrangement for a gas turbine engine. 3,690,096, Cl. 60-38.82p.
Munch, Wilhelm. Rail-fastening devices. 3,690,551, Cl. 238-349.000.
Munson, William A., to Westinghouse Electric Corporation. Blast furnace control based on measurement of pressures at spaced points along the height of the furnace. 3,690,632, Cl. 266-30.000.
Murata, Yoshiro: *See—*
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Murray, Donald R.; Van Soest, Cornelius J. M.; and Moulson, Donald C., to Heede International Ltd. Hoist for multi-storied buildings under construction. 3,690,412, Cl. 187-2.000.
Muto, Yoshio: *See—*
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Muzyczko, Thaddeus M.; Frederiksen, Ronald A.; and York, David L., to Richardson Company, The. Intermediate coating compositions and long running planographic plates prepared therewith. 3,690,880, Cl. 96-33.000.
Mwanyoha, Bakari. Hanger. 3,690,611, Cl. 248-205.00a.
Myasnikov, Nikolai Fedorovich: *See—*
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Myers, Clyde B. Highly siliceous solid sodium silicate. 3,690,822, Cl. 423-334.000.
Myers, Lester L., to Mobile Aerial Towers. Torsion bar stabilizing apparatus for vehicles. 3,690,693, Cl. 280-124.00r.
Mylting, Lauritz E., to Envirotech Corporation, mesne. Apparatus and method for unloading bulk fluent materials. 3,690,731, Cl. 302-42.000.
Nabeyama, Hiroaki: *See—*
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Nagai, Mitsuru: *See—*
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Nagamori, Shigeru: *See—*
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Nagasawa, Shigeo, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Diesel fuel injection system with improved starting performance. 3,690,768, Cl. 123-32.00g.
Nagata, Keniti: *See—*
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Nagawa, Masatoshi: *See—*
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Nagoya, Yutaka; and Toi, Toshio, to Nippon Air Brake Company, Ltd. System for automatically releasing connection between cars in train. 3,690,469, Cl. 213-212.000.
Naito, Takehisa: *See—*
Nihira, Shohachi; Okawara, Yasuo; Naito, Takehisa; and Moriya, Mikio, 3,690,249.
Nakagawa, Hiroshi: *See—*
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Nakagima Precision Industries, Ltd.: *See—*
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Nakahara, Tsuneo; and Yoshida, Kenichi, to Sumitomo Electric Industries, Ltd. Leakage waveguide line from which energy is continually

leaked along the path followed by the leakage waveguide time. 3,691,463, Cl. 325-1.000.

Nakajima, Tutomu; and Shyaku, Tadasi, to Asahi Fancy Flywood Co., Ltd. Method of making decorative wood panels. 3,690,976, Cl. 156-90.000.

Nakamichi, Niro, to Nakamichi Research Incorporated. Tape guide device of a tape recorder. 3,690,535, Cl. 226-190.000.

Nakamichi Research Incorporated: *See—*
Nakamichi, Niro, 3,690,535.

Nakamura, Akira: *See—*
Arai, Hiroshi; Nakamura, Akira; Ikamoto, Atutosi; Okumura, Shunki; Suzuki, Motoyoshi; and Sugiura, Akio, 3,690,735.

Nakamura, Masaya, to Kabushiki Kaisha Nakamura Seisakusho. Game machine. 3,690,657, Cl. 273-1.00e.

Nakata, Koreaki; and Iida, Yoshio. Method of making an electrical capacitor. 3,689,990, Cl. 29-570.000.

Napco, Inc.: *See—*
Shore, Sherman J., 3,690,492.

Napier, John, to International Business Machines Corporation. Deletable conductor line structure. 3,691,290, Cl. 174-68.500.

Narabu, Jiro, to Seibu Gomu Kogaku Kogyo Kabushiki Kaisha. Fender for large ship. 3,690,280, Cl. 114-219.000.

Narisawa, Fumitugu: *See—*
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Nastus, Anthony J.: *See—*
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National Cash Register Company, The: *See—*
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National Lead Company: *See—*
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National Research Development Corporation: *See—*
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Natschke, Eldred H., to Universal Railway Devices Company. Empty load device for railroad cars. 3,690,420, Cl. 188-195.000.

Naumann, Fritz A., to Daimler-Benz Aktiengesellschaft. Five-speed gear-type change speed transmission. 3,690,193, Cl. 74-473.00r.

Nave, Thomas J., to Phillips Petroleum Company. Retractable blow pin for use with prepinched parisons. 3,690,804, Cl. 425-326.000.

Navsat Corporation: *See—*
Jackson, Homer E., 3,691,559.

Naylor, Joseph Edward, to Keithley Instruments, Inc. Chopper amplifier. 3,691,470, Cl. 328-58.000.

Nazzer, Don Barkley, to Canadian General Electric Company, Limited. Isotope separation with heat balancing. 3,690,830, Cl. 423-580.000.

Nedelec, Lucien; and Gasc, Jean-Calude, to Roussel-UCLAF. Preparation of 7α-methyl-$\Delta^{4,9,11}$-estratriene. 3,691,215, Cl. 260-397.450.

Needham, Robert L., to Continental Radiant Glass Heating Corporation. Radiant heater. 3,691,345, Cl. 219-345.000.

Needles, Howard L.: *See—*
Diamond, Martin J.; and Needles, Howard L., 3,690,813.

Neese, Philip C.; Watson, Richard D.; and Zickel, Thomas A., to General Motors Corporation. Anti-lock brake system. 3,690,737, Cl. 303-21.00f.

Neisler Laboratories, Inc.: *See—*
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Neitzel, Ulrich E. G.; and Flint, Hans Gerhard, to Great Salt Lake Minerals and Chemicals Corporation. Recovery of sulfate-free hydrated magnesium chloride from sulfate-contaminated brines. 3,690,844, Cl. 23-296.000.

Neizoldi & Kramer GmbH: *See—*
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Nelson, Gerald V.; Coons, William R., Jr.; and Wray, Glenn C., to Texaco Inc. Hydrodesulfurization and blending of residue-containing petroleum oil. 3,691,152, Cl. 208-210.000.

Nerwin, Hubert, to Eastman Kodak Company. Stripping mechanism. 3,690,238, Cl. 95-13.000.

Nerwin, Hubert, to Eastman Kodak Company. Reduction of initial film winding resistance in camera film magazines. 3,690,451, Cl. 206-52.00f.

Neufeld, Harold A.: *See—*
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Neugold, Harry, Jr.: *See—*
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Neumann, Gerhard Max. Air filter. 3,690,045, Cl. 55-356.000.

Neumeyer, John L.: *See—*
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Neureiter, Norman P.: *See—*
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New England Merchants National Bank, mesne: *See—*
Ross, James W.; and Frant, Martin S., 3,691,047.

Newallis, Peter E.; Nufer, Hans L.; and Chupp, John P., to Monsanto Company. Process for preparing O-aryl phosphonochloridothionates. 3,691,276, Cl. 260-973.000.

Newark Tool & Machine Limited: *See—*
Foizner, Julius, 3,690,608.

Newlen, Kenneth W.: *See—*
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Newman, Daniel J.; and Falck-Muus, Rolf, to Chemical Construction Corporation. Production of ammonium nitrate. 3,690,820, Cl. 423-396.000.

Newmeyer, Reed A., to Solid State Devices, Inc. Optically coupled logic circuit. 3,691,403, Cl. 307-231.000.

Newton, David Francis: *See—*
Greenhalgh, Colin William; and Newton, David Francis, 3,691,209.

Ng, Daniel Y., to Purex Corporation Ltd. Alkaline bath for nonetching removal of scale from titanium workpieces. 3,690,949, Cl. 134-2.000.

Nicholson, Denzel Allan: *See—*
Wann, Robert Earl; Nicholson, Denzel Allan; and Logan, Ted Joe, 3,691,077.

Niebisch, Gunter, to Hansel, Otto, G.m.b.H. Apparatus for continuous melting of sugar. 3,690,372, Cl. 161-64.000.

Nielsen, Vagn; Lauridsen, Jens Birk; and Jensen, Kristian Stistrup, to Aktieselskabet Grindsledvaiket. Process for preparing propylene glycol alginate. 3,691,150, Cl. 260-209.600.

Nier, Johannes, to Bosch, Robert, G.m.b.H. Method of making a semiconductor unit. 3,689,985, Cl. 29-471.300.

Nihei, Hiroshi: *See—*
Yoshikawa, Mituhiro; Nihei, Hiroshi; and Shibasaki, Hiroichi, 3,691,423.

Nihira, Shohachi; Okawara, Yasuo; Naito, Takehisa; and Moriya, Mikio, to Citizen Watch Co., Ltd. Type wheel setting and re-setting means in selective bed and platen printing machines. 3,690,249, Cl. 101-95.000.

Niklaus, Ulrich; and Baumann, Dieter, to Ciba-Geigy AG. Curing agent mixtures for epoxide resins. 3,691,083, Cl. 252-182.000.

Nilsson, Leif Billy, to AB Emmaboda Glusverk. Machine for handling sheet glass. 3,690,477, Cl. 214-8.50b.

Nippon Air Brake Company, Ltd.: *See—*
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Nippon Alpin Rubber Co., Ltd.: *See—*
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Nippon Columbia Kabushikikaisha (Nippon Columbia Co., Ltd.): *See-*
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Nippon Electric Company, Limited: *See—*
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Nippon Kokan Kabushiki Kaisha: *See—*
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Nippon Oil Company, Limited: *See—*
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Nippon Oil Seal Industry Co., Ltd.: *See—*
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Nippon Piston Ring Co., Ltd.: *See—*
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Nippondenso Kabushiki Kaisha: *See—*
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Matsui, Kazuma; and Tsubouchi, Hideo, 3,690,306.
Sumiyoshi, Masaharu; Sakakibara, Shigeru; Wakamatsu, Hisato; and Kato, Takaaki, 3,690,197.

Nishizawa, Hirofumi; Kitaura, Shigeo; Sumoto, Misao; Komagata, Hideki; and Matsumoto, Hirosi, to Toyo Boseki Kabushiki Kaisha. Method of producing tape-shaped assembly of elastic filaments. 3,690,978, Cl. 156-167.000.

Nissan Jidosha Kabushiki Kaisha: *See—*
Ichimura, Hirohisa, 3,690,335.

Nissan Motor Company, Limited: *See—*
Uchiyama, Hiromichi; and Inoue, Naohiko, 3,690,400.
Yamada, Katsuo, 3,690,416.

Nohara, Norimasa: *See—*
Tanaka, Eiichi; Hiramoto, Toshiyuki; and Nohara, Norimasa, 3,691,379.

Nomura, Katsuhiko, to Asahi Kogaku Kogyo Kabushiki Kaisha. Camera structure for positioning a photosensitive component. 3,690,241, Cl. 95-42.000.

Nooker, Eugene L.; Thompson, Luther G.; Varney, Glenn E.; and Dietz, Victor J., to United States of America, Navy. Continuous rod warhead. 3,690,257, Cl. 102-67.000.

Nordskog Company, Inc.: *See—*
Nordskog, Robert A., 3,690,415.

Nordskog, Robert A., to Nordskog Company, Inc. Wheel lock assembly. 3,690,415, Cl. 188-69.000.

Nordson Corporation: *See—*
Baker, Robert G.; and Rosen, Samuel R., 3,690,518.

Nordstrom, Knut Lennart. Maneuvering command display for aircraft. 3,691,520, Cl. 340-27.0at.

Norman, Victor B. Modular system of roof heater shingles. 3,691,343, Cl. 219-213.000.
Norris, Alan H., to Bigelow-Sanford, Inc. Anti-static yarn and fabrics. 3,690,057, Cl. 57-167.000.
North American Rockwell Corporation: *See—*
Gunderloy, Frank C., Jr.; Hamermesh, Charles L.; and Wagner, Ross I., 3,690,971.
Singh, Jagmohan, 3,690,124.
Northeast Electronics Corporation: *See—*
Boatwright, John T., 3,691,473.
Northern Electric Company Limited: *See—*
Bee, James William Moore, 3,691,319.
Northern Fibre Products Company: *See—*
Ambrose, Jere B., 3,689,946.
Northrop Carolina, Inc.: *See—*
Morgan, Bert B.; and Schroeder, George F., 3,690,578.
Porter, William D., 3,690,530.
Porter, William D.; and Taylor, Larry H., 3,690,579.
Schroeder, George F., 3,690,576.
Schroeder, George F., 3,690,577.
Northrup, Hal J. Primer for cured silicone release agents. 3,691,206, Cl. 260-348.50c.
Norton Company: *See—*
Alexander, Donald K., 3,690,568.
Briggs, Walton E., 3,690,151.
Norton Company of Canada: *See—*
Alexander, Donald K., 3,690,568.
Nouar Corporation: *See—*
Bennett, William Coffey; and Stastny, Edwin O., 3,690,590.
Novello, Frederick C.: *See—*
Baldwin, John J.; and Novello, Frederick C., 3,691,178.
Nuclear-Chicago Corporation: *See—*
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Nufer, Hans L.: *See—*
Newallis, Peter E.; Nufer, Hans L.; and Chupp, John P., 3,691,276.
Nutter, Benjamin P.: *See—*
Kisling, James W., III; and Nutter, Benjamin P., 3,690,122.
Nuzum, Larry W. Method for magnetic development of latent electrostatic image. 3,690,912, Cl. 117-17.500.
N.V. Bekaert S.A.: *See—*
Bruggeman, Frans; and Schmidt, Fernand, 3,690,301.
N.V. Ingenieursbureau voor Systemen en Octrooien: *See—*
van der Veen, Romke, 3,690,180.
O-T-D Corporation: *See—*
Ogle, Paul E.; Coleman, Kenneth L.; Wagner, Ross W.; and Harter, Lynn J. (said Ogle and Coleman, assors. to), 3,690,272.
Oak Electro Netics Corporation: *See—*
Jedynak, Leo, 3,690,287.
Oak, John T.: *See—*
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Obata, Shuichi: *See—*
Oda, Fujio; and Obata, Shuichi, 3,691,316.
O'Brien, Gerald Joseph: *See—*
McGinnis, Philip Roswell; and O'Brien, Gerald Joseph, 3,690,465.
O'Brien, John A., to United States of America, Navy. Floating suction head. 3,690,463, Cl. 210-242.000.
Occhipinti, Peter W. Selectively contourable putting green. 3,690,673, Cl. 273-176.00h.
O'Connor, Richard J., to Pinkerton's Incorporated. Watchclock tape storage unit. 3,690,528, Cl. 225-37.000.
Oda, Fujio; and Obata, Shuichi, to Matsushita Electric Industrial Co., Ltd. Semiconductor stress transducer. 3,691,316, Cl. 179-100.410.
Oertel, Gunter: *See—*
Grogler, Gerhard; and Oertel, Gunter, 3,691,112.
Oey, Djin Kian: *See—*
Schoonman, Willem; and Oey, Djin Kian, 3,690,505.
Office National d'Etudes et de Recherches Acrospatiales: *See—*
Galmiche, Philippe Marie; and Hivert, Andre, 3,690,934.
Ogawa, Masaya: *See—*
Kushima, Teizo; Tanaka, Susumu; and Ogawa, Masaya, 3,690,759.
Ogle, Paul E.; Coleman, Kenneth L.; Wagner, Ross W.; and Harter, Lynn J., said Ogle and Coleman, assors. to O-T-D Corporation. Railroad car. 3,690,272, Cl. 105-366.00r.
Ohfuji, Mitsuo: *See—*
Shimada, Hiroshi; Nagai, Mitsuru; Ohfuji, Mitsuo; and Sasaki, Toshiyuki, 3,690,305.
Ohfuka, Toshio; Ichikawa, Yasushi; and Ueda, Takeshi, to Asahi Kasei Kogyo Kabushiki Kaisha. Antistatic treating agent from polyepoxide-polyamine reaction. 3,691,110, Cl. 260-2.0ep.
Ohio State University, The: *See—*
St. Pierre, George R., 3,690,808.
Ohira, Atsuo. Zigzag sewing machine with a control device for varying the overstitch width. 3,690,274, Cl. 112-158.00r.
Ohkawa, Tokio: *See—*
Imai, Masaru; and Ohkawa, Tokio, 3,690,210.
Ohkura Electric Co., Ltd.: *See—*
Baba, Tatsuo; and Abe, Katsuo, 3,691,364.
Ohmura, Ryjichi. Integral guide device for fishing lines. 3,690,027, Cl. 43-24.000.
Ohnacker, Gerhard; Daniel, Helmut; and Machleidt, Hans, to Boehringer Ingelheim G.m.b.H. N-substituted 1,2,3,4,4a,10a-hexahydro-(10H) benzopyrano-[3,2,c]-pyridines. 3,691,173, Cl. 260-293.550.
Ohta, Hiroshi, to Toyoda Koki Kabushiki Kaisha. Workpiece locating apparatus for use in multiwheel grinding machines. 3,690,070, Cl. 51-105.000.
Ohta, Tetsuya: *See—*
Takaoda, Tsuneo; Ohta, Tetsuya; and Itoh, Masaru, 3,691,111.
Oil Shale Corporation, The: *See—*
Barney, John H.; and Carlson, Franklin B., 3,691,056.
Okada, Minoru: *See—*
Susuki, Rinnosuke; Hoshi, Hiroshi; Satto, Jiro; and Okada, Minoru, 3,691,120.
Okada, Takashi: *See—*
Yoshida, Shoushi; Iwama, Atsuaki; Okada, Takashi; and Suda, Tetuo, 3,690,795.
Okada, Tsuneo; Onodera, Yutaka; Mitsuoka, Takeshi; Saito, Yukinori; Muto, Yoshio; Anayama, Takeshi; and Yasukochi, Ko, to Tokyo Shibaura Electric Co., Ltd. Method for manufacturing a superconductive coil element. 3,691,046, Cl. 204-192.000.
Okamoto, Mitsuhiro: *See—*
Ito, Shoji; Fujioka, Kotaro; Okamoto, Mitsuhiro; and Kikuchi, Tetsuya, 3,690,575.
Okawara, Yasuo: *See—*
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Okkonen, Oliver G.: *See—*
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Okumura, Shunki: *See—*
Arai, Hiroshi; Nakamura, Akira; Ikamoto, Atutosi; Okumura, Shunki; Suzuki, Motoyoshi; and Sugiura, Akio, 3,690,735.
Okuyama, Kenichi, to Hitachi, Ltd. Winding of stationary induction apparatus. 3,691,494, Cl. 336-70.000.
Olin Corporation: *See—*
Bakoledis, Andrew G., 3,690,536.
Morris, Jack, 3,691,337.
Olivares, Ismael A.: *See—*
Gabrielsen, Rolf S.; and Olivares, Ismael A., 3,690,872.
Olivetti, Ing., C., & C., S.p.A.: *See—*
Saltini, Fabrizio; and Eccettuato, Vittorio, 3,691,531.
Olkowski, William. Horseshoe catapulting apparatus having a remote control feature. 3,690,660, Cl. 273-101.000.
Olofsson, Mans Olof: *See—*
Sarnik, Stanislaw; and Olofsson, Mans Olof, 3,690,099.
Olson, James F., to Rotary samplers. . 3,690,179, Cl. 73-424.000.
Olympus Optical Co. , Ltd.: *See—*
Takahashi, Nagashige; and Oouchi, Teruo, 3,691,001.
Olympus Optical Co., Ltd.: *See—*
Mori, Toshiyuki, 3,690,769.
O'Mant, Derrick Michael, to Imperial Chemical Industries, Limited. Phenyl-thienyl-and phenyl-fury-malonic acid derivatives. 3,691,202, Cl. 260-332.20a.
OMEGA Louis Brandt & Frere S.A.: *See—*
Humbert, Jean; and Studer, Jean-Fred, 3,690,061.
O'Neill, Cormac G., to Physics International Company. Vapor venting and purging system for engines. 3,690,307, Cl. 123-136.000.
Ono, Hideo: *See—*
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Okada, Tsuneo; Onodera, Yutaka; Mitsuoka, Takeshi; Saito, Yukinori; Muto, Yoshio; Anayama, Takeshi; and Yasukochi, Ko, 3,691,046.
Oouchi, Teruo: *See—*
Takahashi, Nagashige; and Oouchi, Teruo, 3,691,001.
Opderbeck, Fritz; Ploetz, Theodor; and Thamm, Rudolf, to Feldmuehle Aktiengeselslschaft. Method for manufacturing non-woven sheet material. 3,691,009, Cl. 162-146.000.
Opelt, Christian, to Grundig E.M.V. Remote control for recorders. 3,690,591, Cl. 242-204.000.
O'Pray, Hugh: *See—*
MacColl, Donald; and O'Pray, Hugh, 3,691,349.
Optics Technology, Inc.: *See—*
Law, Jack M., 3,690,853.
Orelup, Richard B., to Morton International, Inc. Liquid azo dye composition and process therefor. 3,690,809, Cl. 8-6.000.
Orlovskaya, Galina Yankelevna: *See—*
Fedorkov, Albert Pavlovich; Yaroslavsky, Mikhail Iosifovich; and Orlovskaya, Galina Yankelevna, 3,691,411.
Ormesher, Edward Russell: *See—*
Robinson, Albert Sidney; Lawrenson, Jack; and Ormesher, Edward Russell, 3,690,854.
Ormskirk, Leonard William Eyles, to Lucas, Joseph, (Industries) Limited. Control arrangement for hydraulic transmission system. 3,690,098, Cl. 60-53.00r.
Orzhekhovsky, Julian Felixovich: *See—*
Potak, Yakov Mikhailovich; Orzhekhovsky, Julian Felixovich; Sachkov, Vladimir Vladimirovich; Kagan, Efim Solomonovich; Valdman, Anna Ivanovna; Shpagina, Nadezhda Nikolaevna; Poplavko-Mikhailov , Mikhail Vasilievich; Fomin, Alexandr Pavlovich; and Natapov, imon Leibovich, 3,690,869.
Osborn, Lemuel E.: *See—*
McClain, Douglas; and Osborn, Lemuel E., 3,690,723.
Osmond, Desmond Wilfrid John: *See—*
Clarke, Michael Raymond; Osmond, Desmond Wilfrid John; and Waite, Frederick Andrew, 3,691,123.

Osrow, Leonard, to Osrow Products Company, Inc. Hand steamer with ironing sole. 3,690,024, Cl. 38-69.000.

Osrow Products Company, Inc.: *See—*
Osrow, Leonard, 3,690,024.

Oswald, Hendrikus J.: *See—*
Prevorsek, Dusan C.; Li, Hsin L.; Koch, Paul J.; Oswald, Hendrikus J.; and Schmitt, George J., 3,690,980.

Ota, Katsumi: *See—*
Mori, Chiharu; and Ota, Katsumi, 3,690,230.

Ott, Hanns: *See—*
Kappius, Friedrich; Kristen, Reiner; Ott, Hanns; and Reinholtz, Heinz, 3,691,414.

Ott, Hans, to Siemens Aktiengesellschaft. Device for converting a reciprocating motion into a stepwise rotary motion. 3,690,191, Cl. 74-142.000.

Ott, Reuben C., to Du Pont de Nemours, E. I., and Company. Process for the preparation of globular sodium bisulfate. 3,690,825, Cl. 423-264.000.

Ott, Richard J., to Respond Inc. Automatic ladler. 3,690,517, Cl. 222-358.000.

Ouska, Ralph C., to FMC Corporation. Apron conveyor. 3,690,445, Cl. 198-196.000.

Owen, Michael James: *See—*
Kendrick, Thomas Charles; and Owen, Michael James, 3,691,257.

Owen-Corning Fiberglas Corporation: *See—*
Smith, Irving N.; and Pfeffer, Jack R., 3,690,852.

Owens-Illinois, Inc.: *See—*
Di Frank, Frank J.; and Maze, Glenn W., 3,690,981.

Oxford Electric Corporation: *See—*
Ragni, Luigi, 3,691,490.

Oyama, Yoshio. Method and apparatus for automatically affixing top stops on sliderfastener chain. 3,689,980, Cl. 29-408.000.

Pacific Plantronics, Inc.: *See—*
Wilson, Donald R., 3,691,311.

Packaging Corporation of America: *See—*
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Packaging Industries, Inc.: *See—*
Raspante, Anthony, 3,690,798.

Packard Instrument Company, Inc.: *See—*
Cavanaugh, Robert E., Jr., 3,691,386.

Pal, Ajoy Kumar. Logic track circuit. 3,691,370, Cl. 246-125.000.

Palat, William. Apparatus and method for replacing a defective gate valve. 3,689,979, Cl. 29-401.000.

Pall Corporation: *See—*
Pall, David B., 3,690,606.

Pall, David B., to Pall Corporation. Anisometric compressed and bonded multilayer knitted wire mesh composites. 3,690,606, Cl. 245-1.000.

Panacon Corporation: *See—*
Ferlise, Louis; and Duhamel, Ronald E., 3,690,245.

Pankey, Titus, Jr.: *See—*
Davey, John E.; and Pankey, Titus, Jr., 3,690,915.

Panson, Armand J.: *See—*
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Pantel Co., Ltd.: *See—*
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Paola, Carl Ralph: *See—*
Bergh, Arpad Albert; Paola, Carl Ralph; and Saul, Robert H., 3,690,965.

Papachristou, Christos. Automatic starter for internal combustion machines. 3,691,393, Cl. 290-30.000.

Papanastassiou, Zinin B.; and Neumeyer, John L., to Little, Arthur D., Inc., mesne. 3-Indole-glyoxamides. 3,691,194, Cl. 260-326.13r.

Papiano, Francis John, to RCA Corporation. Method of alloying two metals. 3,690,943, Cl. 117-212.000.

Paquet, Volker: *See—*
Geffcken, Walter; and Paquet, Volker, 3,690,932.

Parachutes Incorporated: *See—*
Guilfoyle, Le Roy F., 3,690,604.

Park-Ohio Industries, Inc.: *See—*
Cachat, John F., 3,691,339.

Parker, Ernest G.; and Craine, Richard W., to International Telephone and Telegraph Corporation. Omnidirectional beacon antenna. 3,691,562, Cl. 343-761.000.

Parker, Gordon M.; and Heuser, Raymond C., to PPG Industries, Inc. Acryloxy esters of anhydrides and coating compositions derived therefrom. 3,690,927, Cl. 117-93.310.

Parker, Levi Christy; Cooper, Thomas Allen; and Meadows, James Lawson, to Texaco Inc. Olefin separation process. 3,691,246, Cl. 260-671.00r.

Parker, Louis W. Electric automobile. 3,690,397, Cl. 180-65.00r.

Parker Machine Co., Inc.: *See—*
Schneider, Joseph C., 3,690,652.

Parks, John M.: *See—*
Landis, George G.; Parks, John M.; and Brown, Kenneth L., 3,691,340.

Partyka, Anthony S., to Kraftco Corporation. Method of making a filled sandwich. 3,690,898, Cl. 99-86.000.

Pasley, Robert H., Sr., to Royalty Designs of Florida, Inc. Apparatus for fabricating highly resilient polyvinyl chloride layers and the like. 3,690,292, Cl. 118-59.000.

Pasqualini, Joseph. Towed aerial target. 3,690,662, Cl. 273-105.300.

Patel, Chandra Kumar Naranbhai, to Bell Telephone Laboratories, Incorporated. Receiver for a time-division-multiplexed train of modulated pulses employing stroked photo-drag-effect devices. 3,691,388, Cl. 250-199.000.

Patel, Jashwant D. Absorption refrigeration system. 3,690,121, Cl. 62-476.000.

Patel, Ravindra P., to Monsanto Company. Process for the preparation of insoluble enzymes. 3,691,016, Cl. 195-68.000.

Patterson, Billy R., to Lone Star Steel Company. Traveling valve. 3,690,348, Cl. 138-97.000.

Patterson, Luther E. Combined lawn mower and edger. 3,690,384, Cl. 172-15.000.

Pattison, Martin Oren; and Bohlmann, Willy Frank, Jr. Method and apparatus for attaching pipelines to offshore structures. 3,690,112, Cl. 61-72.300.

Paule, Kurt: *See—*
Klett, Erich; Paule, Kurt; and Hettich, Alfred, 3,691,407.

Pavlou, James, to Mica Corporation, The. Printed circuit board fabrication by electroplating a surface through a porous membrane. 3,691,007, Cl. 161-213.000.

Paxton, Douglas R.; and Talbott, George Robert, to Paxve, Inc. Burner. 3,690,807, Cl. 431-1.000.

Paxve, Inc.: *See—*
Paxton, Douglas R.; and Talbott, George Robert, 3,690,807.

Payne, Peter Charles John: *See—*
Kilgour, John; Payne, Peter Charles John; Reid, John Stewart; and Everett, Eric George, 3,690,048.
Kilgour, John; Payne, Peter Charles John; Reid, John Stewart; and Everett, Eric George, 3,690,050.

Pearl, David L.; Harris, George E.; Waller, John G.; and Head, Beverly P., Jr., to Grace, W. R., & Co. Carton labeling method. 3,690,986, Cl. 156-257.000.

Pech, Hans Peter, to Schloemann Sktiengesellschaft. Reel for rod or wire. 3,690,631, Cl. 266-6.00r.

Peche, Gerhard: *See—*
Bahr, Alex; and Peche, Gerhard, 3,691,428.

Pechthold, Heinz; and Gold, Gerhard, to PMD Entwicklungswerk fur Kunststoffmaschinen GmbH & Co. Apparatus for closing a filled synthetic material container. 3,690,803, Cl. 425-326.000.

Peck, James G., Jr., to PPG Industries, Inc. Method of operating a mercury-amalgam cathode electroltic cell. 3,691,036, Cl. 204-99.000.

Pedersen, James M. Controllable pitch propeller. 3,690,788, Cl. 416-157.000.

Peil, Archie W.: *See—*
Slator, Damon T.; and Peil, Archie W., 3,690,381.

Peirce, Patricia Marie. Cake tier separator. 3,690,610, Cl. 248-159.000.

Pelletier, Marc, to Ehenisteric Pelletier Enr. Apparatus to displace a snowmoble. 3,690,481, Cl. 214-85.000.

Pelton, Dean E., to Sylvania Electric Products, Inc. Process for preparing phosphors. 3,691,088, Cl. 252-301.60s.

Pennell, Charles Ronald: *See—*
Hays, Robert Guy; Pennell, Charles Ronald; Reed, Edwin Emmett; and Volk, Charles Edward, 3,690,969.

Pennwalt Corporation: *See—*
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PEPRO, Societe pour le Developpement et la Vente de Specialties Chimiques: *See—*
Ducret, Jacques; Pillon, Daniel; and Demozay, Daniel, 3,691,282.

Perales, Fernand: *See—*
Gachot, Jean; and Perales, Fernand, 3,690,733.

Perkins, Earl Stuart, to Butler National Corporation. Area navigation system for automatically selecting waypoints on the track and lying at a right angle from a master station. 3,691,361, Cl. 235-150.270.

Perry, Ernest John: *See—*
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Pet Incorporated: *See—*
Amadon, Roger M.; and Boren, Morris G., 3,690,895.

Peter, Richard; and Angliker, Hans-Joerg, to Ciba-Geigy AG. Insoluble heterocyclic disazo dyes. 3,691,148, Cl. 260-158.000.

Peters, Robert I., to Bigelow-Sanford, Inc. Cabled yarn. 3,690,056, Cl. 57-139.000.

Petersen, Alex, to Danfoss A/S. Toothed wheel machine. 3,690,792, Cl. 418-61.000.

Petersen, Christian C., to Polaroid Corporation. Tape recording apparatus and system having a very thin cassette. 3,691,312, Cl. 179-100.20z.

Petersen, Niel R., to MTS Systems Corporation. Four square test device with torque stabilization. 3,690,168, Cl. 73-162.000.

Petersen, Robert E. A., to Du Pont de Nemours, E. I., and Company. Control system for an ethylene copolymerization process. 3,691,142, Cl. 2-80.780.

Petersen, Tom Kastrup: *See—*
Jensen, Arne; and Petersen, Tom Kastrup, 3,691,439.

Peterson, Carl, to Foster-Miller Associates, Inc. Trencher-scraper machine. 3,690,023, Cl. 37-90.000.

Peterson, John L., to Teletype Corporation. Variable length storing device. 3,691,536, Cl. 340-173.0rc.

Peterson, Neil W. Eyelet for track driven vehicle. 3,690,741, Cl. 305-38.000.

Petro, Jozsef: *See—*
Csuros, Zoltan; Petro, Jozsef; Tungler, Antal; Mathe, Tibor; and Bekassy, Sandor, 3,691,103.

Petrochemicals, Inc.: *See—*
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Petroff, Robert J. Lead-screw tapping head. 3,690,782, Cl. 408-132.000.
Peveto, Edmond A.: *See—*
Hackett, Homer L.; and Peveto, Edmond A., 3,691,239.
Pezzi, Giovanni. Electropneumatic cigarette inspection. 3,690,149, Cl. 73-38.000.
Pfaffle, Ernst, to Sickinger, Hans Company. Mechanism for dividing stacks of paper sheets. 3,690,475, Cl. 214-8.555.
Pfeffer, Jack R.: *See—*
Smith, Irving N.; and Pfeffer, Jack R., 3,690,852.
Pfister, Rudolf: *See—*
Sallmann, Alfred; and Pfister, Rudolf, 3,691,191.
Philipps, Virgil, to Federal Auto Products Co., Inc. Coupling for hoses of different diameters. 3,690,703, Cl. 285-177.000.
Phillips Petroleum Company: *See—*
Billings, William G., 3,691,247.
Clayton, Hadwen A., 3,690,115.
Corrin, Myron L., 3,691,071.
Doss, Richard C.; and Jones, Faber B., 3,690,936.
Nave, Thomas J., 3,690,804.
Williams, Keith A., 3,691,051.
Phillips, Richard A.: *See—*
Battle, James; and Phillips, Richard A., 3,691,503.
Photo Film Co., Ltd.: *See—*
Kitajima, Masao; Yamaguchi, Tsutomu; Kondo, Asaji; and Murcya, Noriyuki, 3,691,090.
Physics International Company: *See—*
O'Neill, Cormac G., 3,690,307.
Piazza, Henry; and Bach, Pierre, to French State represented by the Minister of Armed Forces Ministerial Delegation of Weapons, Technical Delegation of Land Weapons, Manufacturing Workshops of Toulouse. Igniter for electric primer. 3,690,259, Cl. 102-70.20.
Piazze, Thomas E., to Continental Can Company, Inc. Contour bottom bag. 3,690,545, Cl. 229-57.000.
Pickett, Eugene W.: *See—*
Vanlingen, George A.; and Pickett, Eugene W., 3,690,715.
Pickles, Harry, to USM Corporation. Cutting press controls. 3,690,206, Cl. 83-537.000.
Pida, George, to United States of America, Navy. Variable reluctance magnetic field transducer. 3,691,515, Cl. 340-8.00r.
Pieper, Louis W.: *See—*
Lauer, Richard E.; and Pieper, Louis W., 3,689,975.
Pierrel S.p.A.: *See—*
Guadagnini, Giuseppe; and Fabi, Franco, 3,691,151.
Pierson, Marvin B., to Arnico Steel Corporation. Apparatus for improving coating connectricity on metallic coated strands. 3,690,293, Cl. 118-63.000.
Pietsch, Hanns G.: *See—*
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Pilkington Brothers Limited: *See—*
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Pillon, Daniel: *See—*
Ducret, Jacques; Pillon, Daniel; and Demozay, Daniel, 3,691,282.
Pineau, Andre Lucien. Vibration damper. 3,690,640, Cl. 267-137.000.
Pinkerton's Incorporated: *See—*
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Pinnolis, Samuel: *See—*
Connell, James C.; Pinnolis, Samuel; and Schmidt, Wilhelm E. A., 3,690,471.
Pinnow, Douglas Arthur; and Van Uitert, Le Grand Gerard, to Bell Telephone Laboratories, Incorporated. Display system. 3,691,482, Cl. 332-7.510.
Piper, James R. Cooling system. 3,690,370, Cl. 165-22.000.
Pippen, William C., to National Lead Company. Employment of bentonite in brine muds. 3,691,070, Cl. 252-8.50b.
Pittman, Carl R.; and Long, James A. Touch tuning and control circuits. 3,691,298, Cl. 179-1.0vl.
Pivot Punch Corporation: *See—*
Brown, Richard H., 3,690,205.
Pizante, Jack H., to Texas Instruments, Incorporated. Method for locating impedance discontinuities in a wave propagating medium. 3,691,529, Cl. 340-15.5dp.
Pizzurro, Rina M. Drapery hook. 3,689,957, Cl. 16-87.200.
Plakas, Chris J., to Vitalect Corporation. Luminescence detection by surface reaction. 3,690,832, Cl. 23-230.00b.
Plasser, Franz; and Theurer, Josef. Track correction and tamping machine. 3,690,262, Cl. 104-7.00r.
Plasser, Franz; and Theurer, Josef. Track lining apparatus. 3,690,263, Cl. 104-8.000.
Plasser, Franz; and Theurer, Josef. Mobile track working apparatus. 3,690,264, Cl. 104-17.00r.
Platt, Conrad R.: *See—*
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Platus, Daniel H.: *See—*
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Pluzhnikov, Viktor Mikhailovich; Kalantarov, Karl Davidovich; Gugnin, Jury Yakovlevich; Semenov, Valentin Sergeevich; Zelenina, Valentina Vasilievna; and Filatov, Albert Ivanovich. Radiocapsule for registering ionizing radiation in the cavities of human boies. 3,690,309, Cl. 128-2.00a.
PMD Entwicklungswerk fur Kunststoffmaschinen GmbH & Co.: *See—*
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Pneumatiques, Caoutchouc Manufacture et Plastiques Kleber Colombes: *See—*
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Pobst, John R. Fishing fly. 3,690,029, Cl. 43-42.250.
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Pool, Joseph Harbit. Methods of and apparatus for reducing resistant to the hull of a vessel. 3,690,283, Cl. 114-67.00a.
Poore, Earnest C.; and Goforth, John A., Jr., to Midwestern Specialties Ltd. Pipe handling apparatus. 3,690,472, Cl. 214-1.00p.
Poplavko-Mikhailov , Mikhail Vasilievich: *See—*
Potak, Yakov Mikhailovich; Orzhekhovsky, Julian Felixovich; Sachkov, Vladimir Vladimirovich; Kagan, Efim Solomonovich; Valdman, Anna Ivanovna; Shpagina, Nadezhda Nikolaevna; Poplavko-Mikhailov , Mikhail Vasilievich; Fomin, Alexandr Pavlovich; and Natapov, imon Leibovich, 3,690,869.
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Porter, William D.; and Taylor, Larry H., to Northrop Carolina, Inc. Textile thread winder with improved thread traversing mechanism. 3,690,579, Cl. 242-43.000.
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Potrafke, Werner. Device for self-service stores. 3,690,411, Cl. 186-1.00a.
Potter, Earl B., to Rohr Corporation. Thrust controlling system. 3,690,561, Cl. 239-265.290.
Potter, Olin E.; and Tomasi, Biagio J., to Worthington Compressor and Engine International Division of Worthington Corporation. Liquid cooler assembly. 3,690,371, Cl. 165-35.000.
Powers Chemco, Inc.: *See—*
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Powers Manufacturing, Inc.: *See—*
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PPG Industries, Inc.: *See—*
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Prest, Robert J., to Technical Operations, Incorporated. Cable drive assembly. 3,690,529, Cl. 226-76.000.

Prevorsek, Dusan C.; Li, Hsin L.; Koch, Paul J.; Oswald, Hendrikus J.; and Schmitt, George J., to Allied Chemical Corporation. Thermosetting laminates. 3,690,980, Cl. 156-199.000.

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Price, Ralph E., to Landis Tool Company, mesne. Means for adjusting the angular relation between a workpiece to be ground and a tool. 3,690,072, Cl. 51-165.00r.

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Prior, Josef. Flame sensitive ignitor. 3,690,260, Cl. 102-86.500.

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Rain Jet Corporation: *See—*
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Rainwater, Julius H., to Kysor Industrial Corporation. Open refrigerated display case with roll-in display racks. 3,690,118, Cl. 62-250.

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Rapp, Richard K. Prosthetic heart valve. 3,689,942, Cl. 3-1.000.

Rasmussen, Ole-Bendt. Filamentary or sheet-like material of polymeric substances and method and apparatus for producing said material. 3,690,982, Cl. 156-148.000.

Raspante, Anthony, to Packaging Industries, Inc. Extruder head. 3,690,798, Cl. 425-167.000.

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Raymond International Inc.: *See—*
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Reist, Walter; and Kuratle, Hans Rudolf, to Ferog, Fehr & Reist AG. Apparatus for separating a stack of folded printed products or printed products bound at one side. 3,690,645, Cl. 271-29.000.

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Remane, Roger, to Application des Gaz. Spherical containers for pressurized fluids. 3,690,500, Cl. 220-1.00b.

Rennolds, Philip J., to Du Pont de Nemours, E. I., and Company. Rotary boilers. 3,690,302, Cl. 122-11.000.

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Reske, Albert E.; and Johnson, Orlo J., to Tel-E-Lect, Inc. Rotatable and extensible elbow. 3,690,408, Cl. 182-141.000.

Respond Inc.: *See—*
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Reuter, Martin; Beermann, Claus; and Linke, Fritz, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for providing cellulose fibre material with a flame-proof finish fast to washing. 3,690,941, Cl. 117-136.000.

Reynolds, Frank L.; Langer, Alfred C.; and Tweedie, Ellsworth, to Fricitronics of Conn., Inc. Plastic tubing connector. 3,690,704, Cl. 285-244.000.

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Ataka, Hisanori, 3,690,214.
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Robertshaw Controls Company: *See—*
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Robinson, John A., to Automation Industries, Inc. Noise gate for ultrasonic test apparatus. 3,690,156, Cl. 73-67.900.
Robinson, John C.; and Horn, Myron K., to Cities Service Oil Company. Neutron-absorption controller for neutron activation logging. 3,691,384, Cl. 250-84.500.
Robinson, Keith D.; and Tremelin, James D. Method of preparing a container. 3,691,269, Cl. 264-255.000.
Roblin, John M.; Cole, Frank J.; and Reed, William A., to Republic Steel Corporation. Apparatus and method for vaporizing molten metal. 3,690,638, Cl. 266-34.00r.
Rochefort, Joseph J. F., to Quebec Cartier Mining Company. Power distributing system. 3,691,321, Cl. 191-44.100.
Rodari, Gianpiero: *See—*
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Roffey, Patrick; and Verge, John Pomfret, to Lilly Industries, Ltd. 4-Hydrazonomethylthiazole antitrypanocides. 3,691,160, Cl. 260-240.00a.
Rogers, Gerald L., to Stile-Craft Manufacturers, Inc. Automatic valve. 3,690,615, Cl. 251-31.000.
Rohloff, Robert R., to Minnesota Mining and Manufacturing Company. Packaging of semiconductor devices. 3,691,289, Cl. 174-52.0pc.
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Roiron, Jean-Pierre Louis; and Loyau, Guy, to Societe Anonyme, Societe Alsacienne de Constructions Atomiques de Telecommunications et d'Electronique "Alcatel". Controlling of focussing of electronic bombardment. 3,691,341, Cl. 219-121.0cm.
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Rose, Larry A. Extension barrel for use in firing projectiles with firearm using blank cartridges. 3,690,026, Cl. 42-77.000.
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Rundel, Albert A. Luggage carrier. 3,690,526, Cl. 224-42.070.
Runzi, Kurt. Apparatus for the application of self-adhering labels or the like. 3,690,996, Cl. 156-542.000.
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Potak, Yakov Mikhailovich; Orzhekhovsky, Julian Felixovich; Sachkov, Vladimir Vladimirovich; Kagan, Efim Solomonovich; Valdman, Anna Ivanovna; Shpagina, Nadezhda Nikolaevna; Poplavko-Mikhailov , Mikhail Vasilievich; Fomin, Alexandr Pavlovich; and Natapov, imon Leibovich, 3,690,869.
Saito, Yukinori: *See—*
Okada, Tsuneo; Onodera, Yutaka; Mitsuoka, Takeshi; Saito, Yukinori; Muto, Yoshio; Anayama, Takeshi; and Yasukochi, Ko, 3,691,046.
Sakai, Shuzo; Miyake, Toshio; and Sato, Yoshinori, to Hayashibara Company. Process for producing ketose. 3,691,013, Cl. 195-31.00r.
Sakakibara, Shigeru: *See—*

Sumiyoshi, Masaharu; Sakakibara, Shigeru; Wakamatsu, Hisato; and Kato, Takaaki, 3,690,197.
Sakata, Masanobu; Nagata, Keniti; and Nagamori, Shigeru, to Mitsui Shipbuilding and Engineering Co., Ltd. Apparatus for unloading pulverized material in tank. 3,690,730, Cl. 302-15.000.
Salemink, Willard L. Portable apparatus for removing particulate material from exhaust gases. 3,690,039, Cl. 55-228.000.
Sallmann, Alfred; and Pfister, Rudolf, to Ciba-Geigy Corporation. Tetrazole derivatives. 3,691,191, Cl. 260-308.00d.
Saltini, Fabrizio; and Eccettuato, Vittorio, to Olivetti, Ing., C., & C., S.p.A. Electronic computer with cylclic program memory. 3,691,531, Cl. 340-172.500.
Salutsky, Murrell L.; and Shair, Salem, to Chemed Corporation. Method for controlling slime in aqueous systems. 3,690,860, Cl. 71-67.000.
Sambeth, Joerg; and Grundschober, Friedrich, to Societe Rhodiaceta. Aziridine derivatives. 3,691,195, Cl. 260-326.300.
Samuelian, Maurice P.: *See—*
Swanke, Roy L.; Valbona, Bruno M.; and Samuelian, Maurice P., 3,689,999.
Sanada, Akihiko: *See—*
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Sandoz Ltd.: *See—*
Baumann, Hans-Peter; and Keller, Robert-Christian, 3,691,204.
Sandoz-Wander, Inc.: *See—*
Hardtmann, Goetz E., 3,691,167.
Sandvikens Jernverks Aktiebolag: *See—*
Edstrom, John Olof; Innerman, Sven Eric; Berg, Bengt Henrik; and Mills, Brian Edward, 3,690,850.
Sangster, Arlon G., to Jamesburg Corporation, mesne. Photoelectric tape reader having read head disposed above a line joining the topmost points of two drive sprockets. 3,691,372, Cl. 250-219.00d.
Sankyo Company: *See—*
Kobayashi, Goro; Sugawara, Shinichi; and Nagawa, Masatoshi, 3,691,199.
Sansum, Robert David, to Gerrard Industries Limited. Package starring tools. 3,690,350, Cl. 140-93.200.
Santarelli, Vincent. Combination cap and pump for sprayer apparatus. 3,690,516, Cl. 222-340.000.
Santeford, Henry S., Jr.; Meier, John G.; and Alger, George R., to Michigan Technological University, Board of Control. Snow moisture integrator. 3,690,169, Cl. 73-171.000.
Santurri, Pasco R.; and Rother, John H. Laminable film having an integral glutinous ground coating. 3,690,920, Cl. 117-45.000.
Sarett, Lewis H.; and Hannah, John. 5-Aryl and arylphenyl sulfonic acids in treating inflammation. 3,691,185, Cl. 424-303.000.
Sarka, Albert J., to Harris-Intertype Corporation. Chemical honing of dies. 3,690,199, Cl. 76-107.00c.
Sarnik, Stanislaw; and Olofsson, Mans Olof, to AB Kockum Landsverk Landskrona. Brake arrangement for reversible hydraulic engines. 3,690,099, Cl. 60-53.00r.
Sarovac S.A.: *See—*
Rusbach, Maurice, 3,690,595.
Sarris, Samuel E. Push-pull container and cap assembly. 3,690,520, Cl. 222-499.000.
Sasaki, Toshiyuki: *See—*
Shimada, Hiroshi; Nagai, Mitsuru; Ohfuji, Mitsuo; and Sasaki, Toshiyuki, 3,690,305.
Sasse, Klaus: *See—*
Scheibitz, Maria; Von Konig, Anita; Kampfer, Helmut; Mayer, Dietmar; Sasse, Klaus; Kolb, Gunter; Honig, Hans Ludwig; and Meiser, Werner, 3,690,884.
Sato, Yoshihito: *See—*
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Sato, Yoshinori: *See—*
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Satto, Jiro: *See—*
Susuki, Rinnosuke; Hoshi, Hiroshi; Satto, Jiro; and Okada, Minoru, 3,691,120.
Saucy, Gabriel, to Hoffmn-La Roche Inc. Preparation of isoxazolyl 5-hydroxyheptanoic and lactones. 3,691,189, Cl. 260-3.00h.
Saucy, Gabriel; and Scott, John William. Isoxazolyl-substituted benzindenediones. 3,691,190, Cl. 260-307.00h.
Saul, Robert H.: *See—*
Bergh, Arpad Albert; Paola, Carl Ralph; and Saul, Robert H., 3,690,965.
Saul, Robert H., to Bell Telephone Laboratories, Incorporated. Electroluminescent device. 3,690,964, Cl. 148-171.000.
Saxe, Irving Henry: *See—*
Marco, John L.; and Saxe, Irving Henry, 3,690,319.
Sayre, David E., to Sayreco, Inc. Apparatus and method for the removal of impurities from liquids. 3,691,050, Cl. 204-219.
Sayreco, Inc.: *See—*
Sayre, David E., 3,691,050.
Scallet, Barrett L.: *See—*
Katz, Edward; Ehrenthal, Irving; and Scallet, Barrett L., 3,690,948.
Scanlon, James D.: *See—*
Clark, Burton P.; and Scanlon, James D., 3,690,215.
Schabert, Hans-Peter: *See—*
Kruger, Joachim; Schabert, Hans-Peter; Schubert, Franz; and Weber, Robert, 3,691,011.
Porner, Horst; Schabert, Hans-Peter; and Weber, Robert, 3,690,685.
Schadlich, Helmut; and Schembs, Wolfgang, to Siemens Aktiengesellschaft. Method for the production of a germanium planar transistor. 3,690,967, Cl. 148-187.000.
Schaefer, Michael D., to Allied Chemical Corporation. Low pressure indicator for air bag safety system. 3,691,521, Cl. 340-52.00r.
Schafer, Leonhard. Sanitizable pastry folding mechanism. 3,690,248, Cl. 99-450.600.
Schaffer, Detlef: *See—*
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Schaich, Willy: *See—*
Thumm, Helmut; and Schaich, Willy, 3,690,572.
Scharz, Armin; and Scharz, Oskar. Automatic hit indicating shooting target. 3,690,661, Cl. 273-102.20r.
Scharz, Oskar: *See—*
Scharz, Armin; and Scharz, Oskar, 3,690,661.
Schaumberg, Georges. Process for the continuous deposition of a protective layer on forged, rolled or foundry products. 3,690,913, Cl. 117-23.000.
Schecker, Hans-Georg: *See—*
Koehler, Waldemar; and Schecker, Hans-Georg, 3,691,244.
Scheibitz, Maria: *See—*
Krafft, Werner; Kruck, Peter; Meyer, Rudolf; and Scheibitz, Maria, 3,690,885.
Scheibitz, Maria; Von Konig, Anita; Kampfer, Helmut; Mayer, Dietmar; Sasse, Klaus; Kolb, Gunter; Honig, Hans Ludwig; and Meiser, Werner, to Agfa-Gevaert Aktiengesellschaft. Photographic dry copying process. 3,690,884, Cl. 96-29.000.
Scheinpflug, Hans: *See—*
Buchel, Karl-Heinz; Regel, Erik; Grewe, Ferdinand; Scheinpflug, Hans; and Raspers, Helmut, 3,691,192.
Scheldorf, Owen H.; and Anchorage, Kentucky, to General Electric Company. Stationary mold ice maker with the bottom ejector. 3,690,120, Cl. 62-353.000.
Schembs, Wolfgang: *See—*
Schadlich, Helmut; and Schembs, Wolfgang, 3,690,967.
Schering Aktiengesellschaft: *See—*
Gries, Heinz; Hader, Josef; and Steinbeck, Hermann, 3,691,213.
Schindlauer, Karl. Window or door. 3,690,035, Cl. 49-192.000.
Schinzel, Erich: *See—*
Rosch, Gunter; Linke, Werner; Smerz, Otto; and Schinzel, Erich, 3,690,947.
Schlafhorst, W., & Co.: *See—*
Reiners, Walter; and Tho Pesch, Albert, 3,690,126.
Schleinkofer, Rudi W.: *See—*
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Schlieckmann, Alfred: *See—*
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Schuster, Nick A., 3,691,518.
Warren, John P., 3,691,456.
Schmadel, Edmund: *See—*
Stimberg, Hans-Joef; Galinke, Joachim; and Schmadel, Edmund, 3,691,082.
Schmedding, Herbert. Method of manufacturing a block bottom bag. 3,690,221, Cl. 93-35.0rb.
Schmidt, Erwin: *See—*
Hoffman, Herwig; Jescher, Gerhard; Kuerzinger, Alfred; Schmidt, Erwin; Schoenleben, Willibald; Voges, Dieter; and Winderl, Siegfried, 3,691,205.
Schmidt, Fernand: *See—*
Bruggeman, Frans; and Schmidt, Fernand, 3,690,301.
Schmidt, Gunther; Engelhorn, Robert; and Leitold, Mats. Tricyclic heterocyclic amides of diallylamino-alkanoic acids and salts thereof. 3,691,159, Cl. 260-239.30t.
Schmidt, Wilhelm: *See—*
Von Roepenack, Adolf; Wuethrich, Hans; and Schmidt, Wilhelm, 3,691,038.
Schmidt, Wilhelm E. A.: *See—*
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Schmitt, George J.: *See—*
Prevorsek, Dusan C.; Li, Hsin L.; Koch, Paul J.; Oswald, Hendrikus J.; and Schmitt, George J., 3,690,980.
Schmitt, Herrmann: *See—*
Knirsch, Gunther; and Schmitt, Herrmann, 3,691,489.
Schneider, Joseph C., to Parker Machine Co., Inc. Foldable invalid walker convertible from fixed to swingable walker. 3,690,652, Cl. 272-70.300.
Schneider, Kenneth C; and Tuckey, Charles H., to Walbro Corporation. Carburetor construction to eliminate fuel accumulation at the reed valve. 3,690,304, Cl. 123-73.00v.
Schnell, Georg: *See—*
Hartmann, Heinrich; Hartmann, Job-Werner; Wilhelm, Hans; Schnell, Georg; Wolfram, Kittler; Werst, Gerhard; and Baur, Reinhold, 3,690,946.
Schnitzer, Oskar. Cartridge case. 3,690,256, Cl. 102-43.00r.
Schoenleben, Willibald: *See—*
Hoffman, Herwig; Jescher, Gerhard; Kuerzinger, Alfred; Schmidt, Erwin; Schoenleben, Willibald; Voges, Dieter; and Winderl, Siegfried, 3,691,205.

Scholes, Geoffrey William; and Jones, Anthony Ronald, to U.S. Philips Corporation, mesne. Manufacturing a plurality of semiconductor device headers. 3,689,996, Cl. 29-630.00r.

Scholten Honig Research N.V.: *See—*
Dolfing, Thale; and Lolkema, Jan (said Lolkema assor. to), 3,690,107.

Schoonmaker, Edward F. Drum holder. 3,690,075, Cl. 51-368.000.

Schoonman, Willem; and Oey, Djin Kian, to Lummus Nederland N.V. Device for sealingly closing a metal pressure vessel. 3,690,505, Cl. 220-46.0ms.

Schorum, Stanley W.; and Song, Wonjin, to Zenith Radio Corporation. Ultrasonic scanning apparatus with transducer scanning rate-responsive transmitter. 3,690,311, Cl. 128-2.00v.

Schreiner, Gunther; and Stoetzer, Ernst-Joachim, to Dynamit Nobel Aktiengesellschaft. Propellant powders containing nitrocellulose, stabilized with certain aldehydes. 3,690,970, Cl. 149-2.000.

Schroeder, George F.: *See—*
Morgan, Bert B.; and Schroeder, George F., 3,690,578.

Schroeder, George F., to Northrop Carolina, Inc. Textile thread winder with tension compensating device. 3,690,576, Cl. 242-18.0dd.

Schroeder, George F., to Northrop Carolina, Inc. Textile thread winder with transfer tail forming device. 3,690,577, Cl. 242-18.0pw.

Schroeder, Paul H. Device for closing and securing carton flaps. 3,690,222, Cl. 93-52.000.

Schroeder, Peter, to Weber, Paul, AG. Method for continuous wet treatment of a textile web. 3,690,814, Cl. 8-151.000.

Schubert, Franz: *See—*
Kruger, Joachim; Schabert, Hans-Peter; Schubert, Franz; and Weber, Robert, 3,691,011.

Schuller, Eduard; Redlich, Horst; Dickopp, Gerhard; and Klemp, Hans-Joachim, to TED Bildplatten Aktiengesellschaft. Pressure pickup transducers for mechanically stored signals. 3,691,318, Cl. 179-100.41p.

Schultz, Peter C., to Corning Glass Works. Method for producing TiO_2-SiO_2 glasses. 3,690,855, Cl. 65-117.000.

Schulze, Heinz; and Cuscurida, Michael. Rapid drying moisture cured coatings. 3,691,135, Cl. 260-77.5ap.

Schumacher, James D.: *See—*
Jacobs, Harold; Kerecman, Albert J.; and Schumacher, James D., 3,691,478.

Schumag Schumacher Metallwerk G.m.b.H.: *See—*
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Schuster, Nick A., to Schlumberger Technology Corporation. Methods and apparatus for acoustic travel time and cement bond logging. 3,691,518, Cl. 340-18.00p.

Schutt, Norman C.: *See—*
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Schutze, Ernst-Christian: *See—*
Riemhofer, Franz; Dittmann, Walter; Biethan, Uwe; Hornung, Karl-Heinz; and Schutze, Ernst-Christian, 3,691,258.

Schutze, Hans-Jurgen; and Hennings, Klaus, to Telefunken Patentverwertungsgesellschaft m.b.H. Production of circuit device. 3,689,992, Cl. 29-577.000.

Schutze, Henry G.: *See—*
Bown, Delos E.; Neureiter, Norman P.; Schutze, Henry G.; and Williams, Herschelic, 3,691,132.

Schwab, Heinrich: *See—*
Janzon, Karl-Heinz; Simon, Eugen Meyer; and Schwab, Heinrich, 3,691,089.

Schwab, Johann; and Hascic, Wladimir, to Semperit Osterreichisch-Amerikanische Gummiwerke Aktiengesellschaft. Injection mould having a closure in the injection channel particularly for moulded shaped of polyurethane. 3,690,800, Cl. 425-192.000.

Schwartz, Carl H., to Dentsply Research & Development Corporation. Production of molds. 3,690,366, Cl. 164-25.000.

Schweicher, Wolfgang: *See—*
Herzhoff, Peter; Platz, Stephan; Gref, Hans; Schwenger, Willi; Maus, Fritz; Schweicher, Wolfgang; Koepke, Gunther; Wasser, Willi; and Browatzki, Kurt, 3,690,917.

Schwenger, Willi: *See—*
Herzhoff, Peter; Platz, Stephan; Gref, Hans; Schwenger, Willi; Maus, Fritz; Schweicher, Wolfgang; Koepke, Gunther; Wasser, Willi; and Browatzki, Kurt, 3,690,917.

Scio Cabinet Company: *See—*
Loy, George W., 3,690,995.

Scott, Douglas R., to Robertshaw Controls Company. Pneumatic control system ar d apparatus and method utilizing the same. 3,690,629, Cl. 263-33.00b.

Scott, John William: *See—*
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Scott Paper Company: *See—*
Weinstein, James D.; and Davidson, Barry A., 3,689,949.

Scovill Manufacturing Company: *See—*
Hahn, James H., 3,689,998.

Screttas, Constantinos G. Metalation of alkyl side chains of alkyl pyridines, alkyl quinolines and alkyl isoquinolines. 3,691,174, Cl. 260-290.00r.

Scullian Steel Company: *See—*
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Seal-Spout Corporation: *See—*
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Seaquist Valve Company, Division of Pittway Corporation: *See—*
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Searle, G. D., & Co.: *See—*
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Seekircher, Richard: *See—*
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Segura, Marnell A.: *See—*
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Seibu Gomu Kogaku Kogyo Kabushiki Kaisha: *See—*
Narabu, Jiro, 3,690,280.

Scitz, John R. Horse racing board game apparatus. 3,690,666, Cl. 273-134.0ch.

Sekiguchi, Hisashi: *See—*
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Sel-Con, Inc.: *See—*
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Seldin, Morey. Match book with enclosed match heads and safety friction strip. 3,690,449, Cl. 206-29.000.

Semenov, Valentin Sergeevich: *See—*
Pluzhnikov, Viktor Mikhailovich; Kalantarov, Karl Davidovich; Gugnin, Jury Yakovlevich; Semenov, Valentin Sergeevich; Zelenina, Valentina Vasilievna; and Filatov, Albert Ivanovich, 3,690,309.

Semperit Osterreichisch-Amerikanische Gummiwerke Aktiengesellschaft: *See—*
Schwab, Johann; and Hascic, Wladimir, 3,690,800.

Sennewald, Kurt; Erpenbach, Heinz; Vogt, Wilhelm; Lork, Winfried; and Prinz, Peter, to Knapsack Aktiengesellschaft. Preparation of a carrier-supported catalyst. 3,691,096, Cl. 252-437.000.

Seppey, Robert E., to Bendix Corporation, The. Method and apparatus for hardness testing. 3,690,157, Cl. 73-78.000.

Sequerra, Richard I.; Smith, Sidney S.; Assenza, Fred J.; and Greenbaum, William H., to Unilux, Inc. Electronic flash lighting system. 3,691,365, Cl. 240-1.300.

Serres, Carl, Jr.; and Bolton, Benjamin A., to Standard Oil Company. Use of phosphorus compounds as stripping agents for polyamide-imide films. 3,691,136, Cl. 260-78.0tf.

Service d'Exploitation Industrielle des Fabacs et des Allumettes: *See—*
Anfossi, Henri, 3,690,434.

Setzer, Henry J., to Dennison Manufacturing Company. Precut composite tape structure. 3,690,999, Cl. 161-39.000.

Shair, Salem: *See—*
Salutsky, Murrell L.; and Shair, Salem, 3,690,860.

Shannon, John Louis; and Bashan, Edward R., to Go International, Inc. Free point indicator downhole tool with automatic centralizer. 3,690,163, Cl. 73-151.000.

Shannon, Robert A.; and Waters, Charles A., to United States Steel Corporation. Recuperative furnaces. 3,690,636, Cl. 266-55.000.

Sharp, David H. Reservoir. 3,689,943, Cl. 4-28.000.

Sharp, William T., to General Electric Company. Vacuum-type electric switchgear. 3,691,332, Cl. 200-144.00b.

Shaw, Robert J.: *See—*
Feldman, Julian; and Shaw, Robert J., 3,691,134.

Sheldon, A. L., to Sheldon's, Inc. Packages. 3,690,450, Cl. 206-45.190.

Sheldon's, Inc.: *See—*
Sheldon, A. L., 3,690,450.

Sheldrake, Leonard J., to General Motors Corporation. Control circuit for automatically shutting off the windshield wipers subsequent to washer operation. 3,691,442, Cl. 318-443.000.

Shell Oil Company: *See—*
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Christensen, Alton O., 3,691,402.
Wesselingh, Johannes A., 3,691,230.

Shellabarger, Donald Elston. Tire bead sealing and supporting means for retreading mold. 3,690,794, Cl. 425-21.000.

Shelton, Philip L., to Motorola, Inc. Dual band stripline antenna. 3,691,563, Cl. 343-771.000.

Shen, Tsung-Ying; Matzuk, Alexander R.; and Dorn, Conrad P., Jr., to Merck & Co., Inc. Pyrazole methylalkyl salfoxides. 3,691,193, Cl. 260-310.00r.

Shepherd, Edward. Attachment apparatus for material handling vehicles, and material handling vehicles. 3,690,494, Cl. 214-774.000.

Shettel, Ralph E. Electrified node fencing. 3,690,618, Cl. 256-10.000.

Shiba, Sukeyori: *See—*
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Shibasaki, Hiroichi: *See—*
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Shibata, Motoo: *See—*
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Shillander, Harold E. Inflatable packer. 3,690,375, Cl. 166-187.000.

Shimada, Hiroshi; Nagai, Mitsuru; Ohfuji, Mitsuo; and Sasaki, Toshiyuki, to Hitachi, Ltd. and Toyo Kogyo Company Limited. Fuel supply control system for automobile engines. 3,690,305, Cl. 123-97.00b.

Shimada, Kenji: *See—*
Kadowaki, Takashi; Iwasaki, Takao; Mitsuta, Yutaka; and Shimada, Kenji, 3,691,143.

Shinada, Noboru: *See—*
Juna, Kiyoshi; Shinada, Noboru; and Tuchiya, Masuo, 3,691,105.

Shinoda, Yoshie. Toy construction block set. 3,690,031, Cl. 46-17.000.

Shinozaki, Masanobu: *See—*
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Shioiri, Tomonori: *See—*
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Shiosaki, James T., to Honeywell Inc. Inverse digital to analog converter. 3,691,552, Cl. 340-347.0da.

Shive, Richard A. Combination tube, form bend and inflation application. 3,690,140, Cl. 72-293.000.

Shoemaker, James C., to Synons Corporation. Concrete wall form installation with particular tie rod securing means therefor. 3,690,613, Cl. 249-40.000.

Shore, Sherman J., to Napco, Inc. Coil carrier attachment for fork lift vehicles. 3,690,492, Cl. 214-620.000.

Shpagina, Nadezhda Nikolaevna: *See—*
Potak, Yakov Mikhailovich; Orzhekhovsky, Julian Felixovich; Sachkov, Vladimir Vladimirovich; Kagan, Efim Solomonovich; Valdman, Anna Ivanovna; Shpagina, Nadezhda Nikolaevna; Poplavko-Mikhailov , Mikhail Vasilievich; Fomin, Alexandr Pavlovich; and Natapov, imon Leibovich, 3,690,869.

Shyaku, Tadasi: *See—*
Nakajima, Tutomu; and Shyaku, Tadasi, 3,690,976.

Sias, Roy C., to Continental Oil Company. Process for preparing barium-containing dispersion. 3,691,075, Cl. 252-33.000.

Sibakin, Jaroslaw George; Roeder, Gordon Alan; and Hookings, Paul Henry Heathcote, to Steel Company of Canada Limited, The and Metallgesellschaft A.G. Electric-arc steelmaking. 3,690,867, Cl. 75-12.000.

Sickinger, Hans Company: *See—*
Pfaffle, Ernst, 3,690,475.

Siegener Aktiengesellschaft Geisweid: *See—*
Vollhardt, Frohmut, 3,690,374.

Siegfried, Raith. Method to measure mirror deflection. 3,690,770, Cl. 356-152.000.

Sieghartner, Leonard J., to Roth, Roy E., Company. Cooling and lubricating system for bearings. 3,690,410, Cl. 184-6.280.

Siemens Aktiengesellschaft: *See—*
Bahr, Alex; and Peche, Gerhard, 3,691,428.
Bauerlein, Rudolf; and Uhl, Dieter, 3,691,376.
Kappius, Friedrich; Kristen, Reiner; Ott, Hanns; and Reinholtz, Heinz, 3,691,414.
Kruger, Joachim; Schabert, Hans-Peter; Schubert, Franz; and Weber, Robert, 3,691,011.
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Massar, Ernst; and Voigt Hans, 3,691,491.
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Siempelkamp, G., & Co.: *See—*
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Siler AG: *See—*
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Silver, Julian, to U.S. Dynamics Inc., mesne. Method of producing a microfiche. 3,690,762, Cl. 355-77.000.

Silver, Spencer Ferguson. Acrylate copolymer microspheres. 3,691,140, Cl. 260-78.500.

Silvestri, George J., Jr., to Westinghouse Electric Corporation. Low pressure end diffuser for axial flow elastic fluid turbines. 3,690,786, Cl. 415-121.000.

Simon, Eugen Meyer: *See—*
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Simon Handling Engineers Limited: *See—*
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Simon, Paul R.: *See—*
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Simplimatic Engineering Co.: *See—*
East, Jerry L., 3,690,486.

Simpson, Melvin R.: *See—*
Frost, Harold A.; and Simpson, Melvin R., 3,691,524.

Simpson Timber Company: *See—*
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Singer-General Precision, Inc.: *See—*
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Singh, Jagmohan, to North American Rockwell Corporation. Independent needle knitting machines. 3,690,124, Cl. 66-8.000.

Sipin, Anatole J. Fluid proportioning system. 3,690,340, Cl. 137-93.000.

Sitter, Spencer B. Limb holder. 3,690,052, Cl. 56-328.000.

Sjovall, Jan: *See—*
Bergstrom, Sune; and Sjovall, Jan, 3,691,216.

Skau, Evald L.: *See—*
Mod, Robert R.; Magne, Frank C.; and Skau, Evald L., 3,691,158.

Skime, Roger H., to Arctic Enterprises, Inc. Shock mounted suspension system. 3,690,394, Cl. 180-5.00r.

Skinner, Wilson M.: *See—*
French, Lawrence R.; and Skinner, Wilson M., 3,691,248.

Skoda, Raymond E.: *See—*
Lubarsky, Fred E.; and Skoda, Raymond E., 3,691,032.

Slator, Damon T.; and Wilson, Archie R., to Bowen Tools, Inc. Well tubing guide and straightener apparatus. 3,690,136, Cl. 72-160.000.

Slator, Damon T.; and Peil, Archie W., to Bowen Tools, Inc. Tubing hanger assembly and method of using same for hanging tubing in a well under pressure. 3,690,381, Cl. 166-315.000.

Slutsky, Linda F. Educational color association game. 3,690,671, Cl. 273-153.00r.

Smale, Charles H., to General Motors Corporation. Jet propulsion nozzle. 3,690,562, Cl. 239-265.290.

Smalley, Edmund W.: *See—*
Hartford, Winslow H.; and Smalley, Edmund W., 3,691,027.

Smalligan, Wayne J.: *See—*
Kelly, Vincent J.; Smalligan, Wayne J.; and Cloud, Larry L., 3,690,894.

Smerz, Otto: *See—*
Rosch, Gunter; Linke, Werner; Smerz, Otto; and Schinzel, Erich, 3,690,947.

Smirl, Richard L.; and Kerestury, Richard D. Fluid pressure modulating apparatus. 3,690,736, Cl. 303-21.00f.

Smith, A. O., Corporation: *See—*
Donovan, Glenn R., 3,689,976.

Smith, Earl D.: *See—*
Ephraim, Max, Jr.; and Smith, Earl D., 3,691,446.

Smith, Irving N.; and Pfeffer, Jack R., to Owen-Corning Fiberglas Corporation. Method of producing graded fibrous filter media. 3,690,852, Cl. 65-3.

Smith, James M., to Great Western Sugar Company, The. Continuous flow scale with preliminary volumetric measurement. 3,690,392, Cl. 177-59.000.

Smith, James S.; Clare, Leslie Paul; and Kubicki, Robert M., to GTE Sylvania Incorporated. Method for producing sintered cobalt-base alloy containing gold. 3,690,876, Cl. 75-211.000.

Smith Kline & French Laboratories: *See—*
Kaiser, Carl, 3,691,172.

Smith, Loyd D.: *See—*
Joujon-Roche, Phillip J.; and Smith, Loyd D., 3,691,469.

Smith, Norman S.: *See—*
Dawson, Peter H. V.; and Smith, Norman S., 3,689,952.

Smith, Richard D. Board game apparatus. 3,690,667, Cl. 273-134.00b.

Smith, Ronald T.: *See—*
Ross, John M.; and Smith, Ronald T., 3,690,092.

Smith, Ronald W.: *See—*
Lees, Ronald D.; and Smith, Ronald W., 3,691,086.

Smith, Sidney S.: *See—*
Sequerra, Richard I.; Smith, Sidney S.; Assenza, Fred J.; and Greenbaum, William H., 3,691,365.

Smith, Stephen B.: *See—*
Bremner, David F.; and Smith, Stephen B., 3,690,250.

Smith, William A., to Xerox Corporation. Color xerography. 3,690,756, Cl. 355-4.000.

Snam Progetti S.p.A.: *See—*
Corradini, Giorgio; Ghetti, Giuseppe; Cesca, Sebastiano; and Arrighetti, Sergio, 3,691,141.
Facchini, Alessandro, 3,690,729.

Snowdon, Charles. Pressure transducers. 3,690,148, Cl. 73-37.000.

Snyder, James R., to Teledyne, Inc. Turn conveyor. 3,690,443, Cl. 198-182.000.

Societa Italiana Resine S.p.A.: *See—*
Calcagno, Benedetto; Ghirga, Marcello; and Bertlini, Natale, 3,691,098.

Societe Alsacienne de Constructions Atomiques de Telecommunication et d'Electronique: *See—*
Goursolas, Anne-Marie Jeanne; and Lambert, Andre Simon Georges, 3,691,514.

Societe Anonyme des Usines Chausson: *See—*
Chartet, Andre, 3,689,941.

Societe Anonyme dite: L'Oreal: *See—*
Bugaut, Andree; and Estradier, Francoise, 3,690,810.
Charle, Roger; Zviak, Charles; and Kalopissis, Gregoire, 3,691,270.

Societe Anonyme, Societe Alsacienne de Constructions Atomiques de Telecommunications et d'Electronique "Alcatel": *See—*
Roiron, Jean-Pierre Louis; and Loyau, Guy, 3,691,341.

Societe Anonyme: Ugine Kuhlmann: *See—*
Klein, Andre, 3,690,812.

Societe Chimique de Gerland: *See—*
Lansaque, Rene; and Bonnefond, Georges, 3,690,684.

Societe dite: Kuhn Freres & Cie., Societe en Commandite Simple: *See-*
Reber, Walter, 3,690,055.

Societe Generale de Constructions Electriques et Mecaniques (Alsthom): *See—*
Warszawaki, Bernard; and Vandenberghe, Henri, 3,690,954.

Societe Generale de Constructions Electriques et Mecaniques (Alsthom): *See—*
Chadenson, Pierre, 3,690,184.

Societe Italiana Telecomunicazioni Siemens S.p.A.: *See—*
Cicognani, Enrico; and Lyghounis, Evangelo, 3,691,471.

Societe Rhodiaceta: *See—*
Sambeth, Joerg; and Grundschober, Friedrich, 3,691,195.

Societe Sapchim-Fournier-Cimag: *See—*
Boussely, Jean, 3,691,219.

Sokolov, David A., to Xerox Corporation. Lithographic inking apparatus. 3,690,252, Cl. 101-147.000.

Solid State Devices, Inc.: *See—*
Newmeyer, Reed A., 3,691,403.

Solodar, Warren E., to Polaroid Corporation. 2-(Omega-hydroquinonyl-alkyl)-anthraquinones. 3,691,210, Cl. 260-380.000.

Somer, Toivo A., to Bendix Corporation, The. Low energy particle counter with one-dimensional position sensing. 3,691,382, Cl. 250-83.30r.

Sommerfeld, Louis. Method of assembling a frame and panel. 3,689,940, Cl. 29-157.00r.
Sommermeyer, Heinrich, to Sommermeyer, Heinrich, KG. Filter and housing for the same. 3,690,461, Cl. 210-222.000.
Sommermeyer, Heinrich, KG: *See—*
Sommermeyer, Heinrich, 3,690,461.
Sommers, Earl Eugene: *See—*
Johnston, Thomas Emmett; and Sommers, Earl Eugene, 3,691,078.
Song, Wonjin: *See—*
Schorum, Stanley W.; and Song, Wonjin, 3,690,311.
Southern Research Institute: *See—*
Tanquary, Albert Charles, 3,691,119.
Spaeth, Albert J.: *See—*
Harlan, Warren H.; and Spaeth, Albert J., 3,690,484.
Spainhour, Bettye G.; and Willis, Jack B. Vehicle litter receptacle. 3,690,446, Cl. 206-1.000.
Spangler, Earl G., to Lockheed Aircraft Corporation. Ceramics produced from spodumene, petalite and clay. 3,690,904, Cl. 106-39.00r.
Spectral Dynamics Corporation: *See—*
Davis, Robert D., 3,691,394.
Spemog AG: *See—*
Brunner, Josef Alphons, 3,690,622.
Spence, Douglas Roy: *See—*
Ingram, Brian; Spence, Douglas Roy; and Cochrane, Robin Adam, 3,690,738.
Spence, John; Gilman, Paul Brewster, Jr.; and Ulbing, Cynthia Geer, to Eastman Kodak Company. Infrared-sensitized silver halide systems. 3,690,891, Cl. 96-108.000.
Spence, Peter, to Dowty Technical Developments Limited. Hydraulic apparatus. 3,690,789, Cl. 417-203.000.
Sperandio, Gottfried. Device for feeding objects between two points. 3,691,447, Cl. 318-68.000.
Sperry Rand Corporation: *See—*
Miller, Harry, 3,691,356.
Swygert, Wilbert E., Jr., 3,691,404.
Williams, Thomas R., 3,691,535.
Speziale, Angelo John: *See—*
Hamm, Philip C.; and Speziale, Angelo John, 3,690,864.
Spider Staging, Inc.: *See—*
Bruass, Albert, 3,690,409.
Spiller, David O.: *See—*
James, David W. F.; Spiller, David O.; and Coltman, Harvey D., 3,691,053.
Spiller, Richard; Moser, Gottfried; and Berthold, Walter, to Klockner-Humboldt-Deutz Aktiengesellschaft. Motor vehicle with two driving units especially for agricultural purposes. 3,690,395, Cl. 180-6.480.
Spink, Donald R.; and Goodrich, Allen C., to Amax Specialty Metals, Inc. Compactible fused and atomized metal powder. 3,690,963, Cl. 148-126.000.
Spivack, Mayer D. Baby's pacifier. 3,690,324, Cl. 128-359.000.
Spreuer, Philip M. Telescoping light bar. 3,691,366, Cl. 240-8.300.
Spry, Douglas O., to Lilly, Eli, and Company. Method for preparing penicillin sulfoxides. 3,691,188, Cl. 260-306.700.
Squibb, E. R., & Sons, Inc.: *See—*
Yale, Harry Louis, 3,691,162.
Squire, Herbert D., to Admiral Corporation. Adjustable refrigerator shelf. 3,690,744, Cl. 312-351.000.
Srebrev, Srebryu Yovtchev: *See—*
Angelov, Stefan Christov; Hristova, Snejanka Vladimirova; and Srebrev, Srebryu Yovtchev, 3,691,358.
St. Pierre, George R., to Ohio State University, The. Method and apparatus for sulfur dioxide emission control in combustion systems. 3,690,808, Cl. 431-4.000.
St.-Laurent, Andre: *See—*
Johnston, John S.; and St.-Laurent, Andre, 3,690,353.
Staaden, Hans: *See—*
Bromer, Heinz; Meinert, Norbert; Wetzlar, Johann Spincic; and Staaden, Hans, 3,690,905.
Stachowiak, John E.: *See—*
Goss, John B.; and Stachowiak, John E., 3,690,067.
Stacy, Edson H. Apparatus for feeding lifts of sheets without marking same. 3,690,476, Cl. 214-8.5ss.
Stafford, Jay H., to Continental Oil Company. Vibrator stabilization system. 3,690,402, Cl. 181-.5vm.
Staley, A. E., Manufacturing Company: *See—*
Swift, Thomas G., 3,690,938.
Standard Oil Company: *See—*
Fields, Ellis K.; and Feinstein, Allen I., 3,691,243.
Serres, Carl, Jr.; and Bolton, Benjamin A., 3,691,136.
Standard Products Co., The: *See—*
Dieterich, Melvin L., 3,690,038.
Stapp, Hans: *See—*
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Stark, William M.: *See—*
Thompson, Robert Q.; Stark, William M.; and Higgens, Calvin E., 3,691,279.
Stastny, Edwin O.: *See—*
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Stauffer Chemical Company: *See—*
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Erdy, Nicholas Z.; and Yu, Arthur J., 3,691,107.
Kraft, Paul; and Brunner, Robert H., 3,691,127.
Stearns-Roger Corporation: *See—*
Vanlingen, George A.; and Pickett, Eugene W., 3,690,715.
Stecher, Friedhelm, to Goetzewerke Friedrich Goetze A.G. Device for testing components which are subjected to alternating stresses. 3,690,162, Cl. 73-119.00r.
Stedtnitz, Wolfgang Richard Ernst, to Fried Krupp Gesellschaft mit beschrankter Haftung. Velocity measuring system. 3,691,513, Cl. 340-3.00d.
Steel Company of Canada, Limited, The: *See—*
Herman, Hans, 3,690,583.
Sibakin, Jaroslaw George; Roeder, Gordon Alan; and Hookings, Paul Henry Heathcote, 3,690,867.
Steinbeck, Hermann: *See—*
Gries, Heinz; Hader, Josef; and Steinbeck, Hermann, 3,691,213.
Stemme, Otto: *See—*
Futterer, Bodo; Stemme, Otto; and Mayer, Jurgen, 3,690,043.
Sterly, Glenn E., to Ampex Corporation. Repeat means for a cassette changer. 3,690,679, Cl. 274-4.00f.
Sternbach, Leo Henryk: *See—*
Fryer, Rodney Ian; and Sternbach, Leo Henryk, 3,691,157.
Stewart, John D.: *See—*
Tregembo, Rhoderic; Dolezal, Wayne R.; Boughton, Lowell D.; and Stewart, John D., 3,690,106.
Stile-Craft Manufacturers, Inc.: *See—*
Rogers, Gerald L., 3,690,615.
Stiles, Alvin B. Uniform composite structures of catalyst and fibrous refractory. 3,691,097, Cl. 252-440.000.
Stimberg, Hans-Josef; Galinke, Joachim; and Schmadel, Edmund. Low-foaming rinsing, washing and cleaning compositions. 3,691,082, Cl. 252-98.000.
Stoddard, Edgar S. Filter structure and method of making the same. 3,689,994, Cl. 29-611.000.
Stoetzer, Ernst-Joachim: *See—*
Schreiner, Gunther; and Stoetzer, Ernst-Joachim, 3,690,970.
Stol, Miroslav: *See—*
Stoy, Vladimir; Stol, Miroslav; Prokopova, Helena; and Kliment, Karel, 3,691,263.
Stolz, Werner: *See—*
Hubner, Klaus; Prokert, Konrad; and Stolz, Werner, 3,691,380.
Stolzer, Claus; Hammann, Ingeborg; and Unterstenhofer, Gunter, to Farbenfabriken Bayer Aktiengesellschaft. Phosphorylated and phosphonylated derivatives of mercaptoacetic acid-N',N'-dialkylhydrazides. 3,691,277, Cl. 260-923.000.
Stop-Motion Devices Corporation: *See—*
Tellerman, Edward M.; and Deniega, Castillo, 3,690,127.
Storch, Leonard. Photocomposition error correction system. 3,690,231, Cl. 95-4.50r.
Storer, Thomas Kirkly: *See—*
Baker, Ronald; and Storer, Thomas Kirkly, 3,691,164.
Stoy, Vladimir; Stol, Miroslav; Prokopova, Helena; and Kliment, Karel, to Ceskoslovenska akademie ved. Method for manufacturing rotation-symmetric articles by centrifugal casting. 3,691,263, Cl. 264-1.000.
Strachan, Robert, to Robertshaw Controls Company. Digital clock structure and parts therefor. 3,690,063, Cl. 58-125.00c.
Strain, Clifford R.: *See—*
Anderson, Eugene A.; and Strain, Clifford R., 3,690,643.
Stralser, Bernard J. Recovering water from spent sulfite liquor. 3,691,041, Cl. 204-152.000.
Strickland, Carl G.; and Clark, Walter D. Limb removing apparatus. 3,690,351, Cl. 144-2.00z.
Strohmeier, Harold, to Gebr. Bohler & Co., AG. Apparatus for supplying flowable material. 3,690,513, Cl. 222-55.000.
Stroszynski, Joachim. Process and apparatus for the continuous production of a lithographic surface. 3,691,030, Cl. 204-32.00r.
Studer, Jean-Fred: *See—*
Humbert, Jean; and Studer, Jean-Fred, 3,690,061.
Stull, John William: *See—*
Chow, Ken-Tang; Stull, John William; and Bates, Charles Edward, 3,691,390.
Sturdivan, Rex E., to Zinsco Electrical Products. Electrical power outlet for trailer camp sites and the like. 3,691,288, Cl. 174-38.000.
Sturmo, Giuseppe; and Maran, Mario, to F.A.V. S.r.L. Automobile tester. 3,690,165, Cl. 73-117.000.
Suda, Hideaki: *See—*
Koga, Koichi; Suda, Hideaki; and Akamatsu, Takashi, 3,691,203.
Suda, Tetuo: *See—*
Yoshida, Shoushi; Iwama, Atsuaki; Okada, Takashi; and Suda, Tetuo, 3,690,795.
Sudrabin, Leon P.; and Neugold, Harry, Jr., to Pennwalt Corporation. Electrical shield for cathodic protection systems. 3,691,040, Cl. 204-147.000.
Suchiro Sen-I Kogyo Kabushiki Kaisha: *See—*
Endo, Hiroshi; Tokoyoda, Kazuo; Fujiyu, Takemi; Kayasuga, Yasuaki; and Kunii, Tokio, 3,690,911.
Sugawara, Shinichi: *See—*
Kobayashi, Goro; Sugawara, Shinichi; and Nagawa, Masatoshi, 3,691,199.
Sugiura, Akio: *See—*
Arai, Hiroshi; Nakamura, Akira; Ikamoto, Atutosi; Okumura, Shunki; Suzuki, Motoyoshi; and Sugiura, Akio, 3,690,735.
Sulzer Brothers, Ltd.: *See—*
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Sumitomo Chemical Co., Ltd.: *See—*
Ichiki, Eiichi; Iida, Kazuo; Inoue, Yashuhiko; and Uyeo, Keizo, 3,691,108.

Sumitomo Chemical Company, Ltd.: *See—*
Kaminaka, Hiroshi; Kotera, Norio; Kanda, Tatsuo; Kuruma, Hiroshi; Yanagihara, Hideki; and Murata, Yoshiro, 3,691,278.
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Sumitomo Electric Industries, Ltd.: *See—*
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Nakahara, Tsuneo; and Yoshida, Kenichi, 3,691,463.

Sumiyoshi, Masaharu; Sakakibara, Shigeru; Wakamatsu, Hisato; and Kato, Takaaki, to Nippondenso Kabushiki Kaisha. Automatic transmission. 3,690,197, Cl. 74-731.000.

Summers, James E.: *See—*
Turner, Lyman H.; Kukucka, William P.; and Summers, James E., 3,690,537.

Sumoto, Misao: *See—*
Nishizawa, Hirofumi; Kitaura, Shigeo; Sumoto, Misao; Komagata, Hideki; and Matsumoto, Hirosi, 3,690,978.

Sun Oil Company: *See—*
Kirk, Merritt C., Jr., 3,691,063.

Sunder, Sham: *See—*
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Sundstrand Corporation: *See—*
Pollman, Frederic W.; Frandsen, Lee R.; and Throckmorton, Charles D., Sr., 3,690,793.

Sundstrom, Roy N.: *See—*
Bustraan, Daniel J.; Gossie, Mijo A.; Sundstrom, Roy N.; and Wisner, William R., 3,690,527.

Sung, Fu-Tien, to Grove Manufacturing Company. Crane boom. 3,690,742, Cl. 308-3.00r.

Sunkist Growers, Inc.: *See—*
Ross, John M.; and Smith, Ronald T., 3,690,092.

Super Mold Corporation: *See—*
Kiedrowski, Hugh P.; and Eriksen, Merrill K., 3,690,010.

Superior Plating Company: *See—*
Raymond, Louis W.; and Gussack, Mark C., 3,691,029.

Supreme Equipment & Systems Corporation: *See—*
Castaldi, John A., 3,690,479.

Sura, James J., to Union Carbon Corporation. Polyepoxide compositions containing dicyandiamide and an iodonium, phosphonium, or sulfonium salt. 3,691,133, Cl. 260-47.0ec.

Susuki, Rinnosuke; Hoshi, Hiroshi; Satto, Jiro; and Okada, Minoru, to Lion Fot & Oil Co., Ltd. Hot-metal adhesive. 3,691,120, Cl. 260-27.0ev.

Suter, Hans; Zutter, Hans; and Brunner, Josef, to Eprova Aktiengesellschaft. Asymmetrical diamides of tetraiodoterephthalic acid. 3,691,196, Cl. 260-326.300.

Sutko, Adolph A., to Continental Oil Company. Equal flow distributor. 3,690,341, Cl. 137-101.000.

Sutton, James F. Public transportation system. 3,690,267, Cl. 104-165.000.

Suzuki, Clarence K.: *See—*
Fa, Charles H.; and Suzuki, Clarence K., 3,690,968.

Suzuki, Motoyoshi: *See—*
Arai, Hiroshi; Nakamura, Akira; Ikamoto, Atutosi; Okumura, Shunki; Suzuki, Motoyoshi; and Sugiura, Akio, 3,690,735.

Suzuki, Motoyuki: *See—*
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Suzuki, Tsuyoshi: *See—*
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Swanke, Roy L.; Valbona, Bruno M.; and Samuelian, Maurice P., to Dynamics Corporation of America. Can opener. 3,689,999, Cl. 30-4.00r.

Swartz, Elmer L., to United States of America, Army. One shot fluid gate. 3,690,338, Cl. 137-81.500.

Swearingen, Judson S.; and Sunder, Sham. Refrigeration process for use in liquefication of gases. 3,690,114, Cl. 62-40.000.

Sweeney, John D.: *See—*
King, John W.; and Sweeney, John D., 3,690,435.

Swidinsky, John: *See—*
Brown, Bernard Beau; and Swidinsky, John, 3,691,197.

Swift, Harold E., to Gulf Research & Development Company. Group VIII metal-tin catalyst and method of making same. 3,691,102, Cl. 252-469.000.

Swift, Thomas G., to Staley, A. E., Manufacturing Company. Remoistenable adhesive composition for prepasted wall coverings. 3,690,938, Cl. 117-122.00s.

Switzer, James A. Paint brush storing sealable plastic bag. 3,690,448, Cl. 206-15.100.

Swygert, Wilbert E., Jr., to Sperry Rand Corporation. Variable duty cycle control circuit. 3,691,404, Cl. 307-252.00w.

Sylvania Electric Products, Inc.: *See—*
Pelton, Dean E., 3,691,088.
Wilson, Dennis L., 3,691,549.

Syncro Corporation: *See—*
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Synons Corporation: *See—*
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Systron-Donner Corporation, mesne: *See—*
Missio, Danilo V.; Wollman, Herbert; and Englander, Irving G., 3,690,767.

Syva Company, mesne: *See—*
Goldstein, Avram; Leute, Richard K.; and Ullman, Edwin F., 3,690,834.

Szabo, Karoly, to Esso Research and Engineering Company. Phosphorus-containing thiomorpholinones. 3,691,163, Cl. 260-243.00b.

Tabor, John R. Tuneling machine with concrete form transfer apparatus. 3,690,470, Cl. 214-1.0bb.

Taillon, John Kellner, to Bell & Howell Company. Control system. 3,690,750, Cl. 352-124.000.

Taj, Hatim H., to General Electric Company. Splice for joining high voltage cables. 3,691,291, Cl. 174-73.00r.

Takahashi, Kentaro; and Sato, Yoshihito, to Nippon Piston Ring Co., Ltd. Method of casting composite cam shafts. 3,689,986, Cl. 29-527.600.

Takahashi, Nagashige; and Oouchi, Teruo, to Olympus Optical Co., Ltd. Flexible protecting sheath of an elongated flexible optical fiber bundle. 3,691,001, Cl. 161-96.000.

Takahashi, Tadao: *See—*
Yamagishi, Hidehisa; Yokoi, Fumitoshi; and Takahashi, Tadao, 3,690,940.

Takaoda, Tsuneo; Ohta, Tetsuya; and Itoh, Masaru, to Nippon Oil Seal Industry Co., Ltd. Epihalohydrin polymers. 3,691,111, Cl. 260-2.00a.

Takase, Shinji; and Shioiri, Tomonori, to Nippon Oil Company, Limited. Method for the preparation of isomerization catalyst and process for the isomerization. 3,691,255, Cl. 260-683.680.

Takeda Chemical Industries, Ltd.: *See—*
Higashide, Eiji; Hasegawa, Toru; Ono, Hideo; Asai, Mitsuko; Muroi, Masayuki; and Kishi, Toyokazu, 3,691,280.
Isono, Masao; Tomoda, Katsumi; Miyata, Koichi; Maejima, Kazutaka; and Kodama, Reijiro, 3,691,014.
Kishi, Toykazu; Harada, Setsuo; Misuno, Komei; Higashide, Eiji; and Shibata, Motoo, 3,691,181.
Marumoto, Ryuji; Yoshioka, Yoshio; Aoki, Hisashi; and Toda, Jun, 3,690,900.

Takehara, Hiraki. Sanitary process of packing a subject into a vessel. 3,691,267, Cl. 264-98.000.

Takeuchi, Hiroshi: *See—*
Kikuchi, Sigehito; Takeuchi, Hiroshi; and Aman, Norio, 3,690,432.

Talbott, George Robert: *See—*
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Tam, William A., to Chicago Bridge & Iron Company. Stable offshore structures. 3,690,108, Cl. 61-46.000.

Tanaka, Eiichi; Hiramoto, Toshiyuki; and Nohara, Norimasa, to Director National Institute of Radiological Sciences, Science and Technology Agency. Scintillation camera device. 3,691,379, Cl. 250-71.50r.

Tanaka, Itsuko: *See—*
Tanaka, Masatami; and Hirotani, Tadashi, 3,690,621.

Tanaka, Katsunobu; Kimura, Kazuo; and Yamaguchi, Ken, to Kyowa Hakko Kogyo Co., Ltd. Process for producing citric acid. 3,691,012, Cl. 195-28.00r.

Tanaka, Masatami; deceased (by Tanaka, Itsuko; administratrix); and Hirotani, Tadashi, to Kyowa Hakko-Kogyo Co., Ltd. Agitator. 3,690,621, Cl. 259-96.000.

Tanaka, Susumu: *See—*
Kushima, Teizo; Tanaka, Susumu; and Ogawa, Masaya, 3,690,759.

Tanaka, Yasuto: *See—*
Yokota, Yoshiyuki; Miyagawa, Takashi; Tanaka, Yasuto; and Torii, Tatuki, 3,690,929.

Tandy, William H., to Addressograph-Multigraph Corporation. Planographic printing element having carboxylic acid treated image areas. 3,690,878, Cl. 96-1.800.

Tanigami, Satoshi, to Elm Industry Co., Ltd. Tape feed apparatus for use in electro-motive tape cutter. 3,690,531, Cl. 226-136.000.

Tanquary, Albert Charles, to Southern Research Institute. Oxysilylene fluorochemical polymers and process for preparing same. 3,691,119, Cl. 260-2.00s.

Tarshis, Lemuel A.; and Walker, James L., to General Electric Company. Grain size of metal castings. 3,690,874, Cl. 75-170.000.

Tarui, Yasuo: *See—*
Hayashi, Yutaka; and Tarui, Yasuo, 3,690,966.

Tateisi Electronics Co.: *See—*
Yamamoto, Mititaka, 3,691,527.

Tateno, Hiroshi: *See—*
Kataoka, Shoei; Tateno, Hiroshi; Fujisada, Hiroyuki; Kawashima, Mitsuo; Komamiya, Yasuo; and Yamada, Hideo, 3,691,481.

Taylor, Cecil R. Putting practice device. 3,690,674, Cl. 273-176.00g.

Taylor Garage Doors, Inc.: *See—*
Kempel, John J., 3,690,037.

Taylor, Glenn Edward. Vehicle transport. 3,690,717, Cl. 296-1.00a.

Taylor, Glenn N., to Kendall Company, The. Neck closing smock or gown. 3,689,939, Cl. 2-114.000.

Taylor, Larry H.: *See—*
Porter, William D.; and Taylor, Larry H., 3,690,579.

Teague, Ernest Douglas, to Johnson, Matthey & Co. Limited. Method of making metal articles. 3,689,987, Cl. 29-527.200.

Tebo, Walter J., to Emhart Corporation. Sensor control for tool breakage. 3,690,202, Cl. 82-34.00f.

Technical Communications Corporation: *See—*
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Tellerman, Edward M.; and Deniega, Castillo, to Stop-Motion Devices Corporation. Defective latch needle detector and control network therefor. 3,690,127, Cl. 66-157.000.
Tenconi, Riccardo. Device for a multi-feed circular knitting machine. 3,690,125, Cl. 66-42.000.
Texaco Development Corporation: *See—*
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Texaco Inc.: *See—*
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Thaler, Warren A., to Esso Research and Engineering Company. Preparation of acid halides from paraffins. 3,691,043, Cl. 204-163.0he.
Thaler, Warren A., to Esso Research and Engineering Company. 3,5-Substituted-1,2,4 thiadiazoles. 3,691,183, Cl. 260-302.0sd.
Thamm, Rudolf: *See—*
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Thompson, Earl A., to Lamb, F. Jos., Company and Thompson, Earl A., Manufacturing Company. Valve. 3,690,956, Cl. 148-2.000.
Thompson, Earl A., to Lamb, F. Jos., Company. Camshaft. 3,690,957, Cl. 148-3.000.
Thompson, Earl A., to Lamb, F. Jos., Company. Rocker arm. 3,690,958, Cl. 148-3.000.
Thompson, Earl A., to Lamb, F. Jos., Company. Alloy, article of manufacture, and process. 3,690,959, Cl. 148-2.000.
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Thompson, Eric William; and Marshall, Michael Charles, to Imperial Chemical Industries Limited. Detergent compositions. 3,691,081, Cl. 252-89.000.
Thompson, George W.; and Oak, John T., to Continental Can Company, Inc. Necked-in can body and method and apparatus for making same. 3,690,279, Cl. 113-120.0aa.
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Thompson, Robert Q.; Stark, William M.; and Higgens, Calvin E., to Lilly, Eli, and Company. Antibiotic nebramycin and preparation thereof. 3,691,279, Cl. 424-116.000.
Thompson, Walter W., to Emerson Electric Co. Portable partition system. 3,690,365, Cl. 160-135.000.
Thomson CSF: *See—*
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Throckmorton, Charles D., Sr.: *See—*
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Thuillier, Yvonne. Compositions containing a heart extract. 3,691,274, Cl. 424-95.000.
Thumm, Helmut; and Schaich, Willy, to Voith, J. M., GmbH. Two press grinder constructed for easy wheel replacement. 3,690,572, Cl. 241-151.000.
Tilby, Sydney Edward, to Canadian Cane Equipment, Ltd. Apparatus for processing sugarcane. 3,690,358, Cl. 146-119.000.
Tippetts, John Russell; Golder, Jack Alexander; and Grant, John, to United Kingdom Atomic Energy Authority. Fluid flow measurement. 3,690,171, Cl. 73-194.00b.
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Tolar, Neal Jay, to Texas Instruments, Incorporated. Fabrication of semiconductor devices having low thermal impedance bonds to heat sinks. 3,689,993, Cl. 29-583.000.
Tomasi, Biagio J.: *See—*
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Townsend, Bruce A. Apparatus for coating cylindrical object. 3,690,296, Cl. 118-227.000.
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Trupp, Garrison G.; and Trupp, Marc A. Faucet and plumbing attachment for interdental mouth wash dispenser. 3,690,314, Cl. 128-66.000.
Trupp, Marc A.: *See—*
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Tsunoda, Masashi, to Tsunoda, Jitensha, Kabushiki Kaisha. Method of forming a claw portion of the front wheel journal fork of a bicycle. 3,689,969, Cl. 29-150.000.
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Turner, Lyman H.; Kukucka, William P.; and Summers, James E., to Xerox Corporation. Staple forming and fastening apparatus. 3,690,537, Cl. 227-88.000.
Turzillo, Lee A., to Marathon Oil Company. Method and means for producing pile or like structural columns in situ. 3,690,109, Cl. 61-53.640.
Tutle, Gary G.; and Klick, Douglas H. Multi patient dental instruction console. 3,690,008, Cl. 32-71.000.
Tuttle, Phillip E., to Federal Screw Works. Hydraulic cleaning device. 3,690,558, Cl. 239-127.000.
Tweedie, Ellsworth: *See—*
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Tyler, Hugh J., to Robertshaw Controls Company. Actuating device employing a heat expansible wire. 3,691,499, Cl. 337-123.000.
Uchiyama, Hiromichi; and Inoue, Naohiko, to Nissan Motor Company, Limited. Vehicle power steering control device. 3,690,400, Cl. 180-79.20r.
Ueda, Takeshi: *See—*
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Ulbing, Cynthia Geer: *See—*
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Ullberg, Sven Gustav Folke, to Incentive Research & Development AB. Microtome with means for collecting sections of the specimen on a tape. 3,690,988, Cl. 156-353.000.
Ullman, Edwin F.: *See—*
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Umahashi, Minoru; Yamakawa, Hitoshi; and Suzuki, Motoyuki, to Kabushiki Kaisha Ricoh. Heating device for sheet-like object. 3,690,015, Cl. 34-95.000.
UMC Industries, Inc.: *See—*
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Umeda, Kaoru; Ishii, Kenjiro; and Endo, Hiroshi, to Minolta Camera Kabushiki Kaisha. Device for intermittently transporting roll film. 3,690,532, Cl. 226-149.000.
Ungar, Leslie A.; and Rosenthal, Arthur. Applicator assembly. 3,690,452, Cl. 206-56.00c.
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Urbanek, Edwin A., to Xerox Corporation. Control system for an optical imaging system. 3,690,754, Cl. 355-3.000.
Urbutis, Algimantas Povilas, to Union Carbide Corporation. Method and apparatus for shirring delicate and fragile food casings. 3,689,960, Cl. 17-51.000.
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Valonis, Edmund J., to Inland Steel Company. Apparatus for confining cobbles. 3,690,134, Cl. 72-37.000.

Van Cleven, Rene Eugene; and Van Cleven, Willy Emile, to Koclinstallaties Van Cleven Gebroedere, personenvennootschap met beperkte aanaprakelijkheid. Potato chip dispensing apparatus. 3,690,247, Cl. 99-355.000.

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Van Cleven, Rene Eugene; and Van Cleven, Willy Emile, 3,690,247.

Van de Belo, Roelof; Begemann, Heinrich K. S. P.; Bos, Hendrikus J.; and Mann, Adriaan B. Method and an apparatus for taking an undisturbed soil sample. 3,690,389, Cl. 175-59.000.

van de Bilt, Pieter Arnoldus. Apparatus for applying, tensioning and sealing a synthetic band around a package. 3,690,090, Cl. 53-198.00r.

Van De Stadt, E. G., Schweepwert N.V.: *See—*
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Van De Stadt, Ericus Gerhardus, to Van De Stadt, E. G., Schweepwert N.V. Rudder or keel for a wind and/or power propeller vessel. 3,690,284, Cl. 114-152.000.

Van Den Heuvel, Walter August; Vanhalst, Johan Eugeen; and Brinckman, Eric Maria, to Gevaert-Agfa N.V. Print-out process utilizing chemicall sensitize lead salt in organophilic binder. 3,690,886, Cl. 96-88.000.

van der Veen, Romke, to N.V. Ingenieursbureau voor Systemen en Octrooien and "Spanstaal". Dredger vessel and a method of determining the loaded weight of sedimented material in a dredger vessel. 3,690,180, Cl. 73-432.00r.

Van Hecke, George J.; and Cassell, Robert D., to Huck Manufacturing Company. Fastener installation system. 3,689,951, Cl. 10-155.00r.

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Van Rooij, Petrus Johannes Cornelius. Connection of two members shrunk on each other. 3,690,707, Cl. 287-52.00r.

Van Ryn, Arthur L., to American Seating Company. Three-quarter fold chair. 3,690,726, Cl. 297-332.000.

Van Soest, Cornelius J. M.: *See—*
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Van Uitert, Le Grand Gerard: *See—*
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Van Uum, Donald R.; and Jalbing, John I., to General Motors Corporation. Igniter plug with improved electrode. 3,691,419, Cl. 313-138.000.

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VanDest, Jean Claude, to Massey-Ferguson Services N.V. Tractor controlled trailer brake. 3,690,734, Cl. 303-7.000.

Vanhalst, Johan Eugeen: *See—*
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Vanlingen, George A.; and Pickett, Eugene W., to Stearns-Roger Corporation. Traveling crane head subassembly for atomic reactor fuel cells. 3,690,715, Cl. 294-88.000.

Varadi, Andrew G.; Rubinstein, Richard B.; and Radoff, Steven, to General Instrument Corporation. Read only memory system having increased data rate with alternate data readout. 3,691,534, Cl. 340-173.00r.

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Vass, Edward J.; Braun, Richard H.; and Platt, Conrad R., to United States of America, Air Force. Liquid propellant cartridge. 3,690,255, Cl. 102-39.000.

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Vaughn, Charles A. Animation system. 3,690,747, Cl. 352-87.000.

Vaughn, Walter L.: *See—*
Kottle, Sherman; Carl, William P.; and Vaughn, Walter L., 3,690,774.

VEB Fluorwerke Dohna: *See—*
Hubner, Klaus; Prokert, Konrad; and Stolz, Werner, 3,691,380.

Velavicius, Alfonsas; and Wanlass, Bert R., to General Motors Corporation. Control unit for window regulator and closure latch. 3,690,036, Cl. 49-279.000.

Velling, Gunter: *See—*
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Vemuri, Krishna P., to Abitibi Paper Company, Ltd. Polysoccharide oxidized products. 3,691,153, Cl. 260-209.00r.

Vendmart, Inc.: *See—*
Deaton, James M., 3,690,510.

Venturi, Enrico. Apparatus for coating articles with a dry powdered material. 3,690,298, Cl. 118-629.000.

Vercillo, Peter A.: *See—*
Westfall, James E.; Lawson, Arthur L.; and Vercillo, Peter A., 3,690,499.

Vereinigte Draht-und Kabelwerke Aktiengesellschaft Berlin und Duisburg: *See—*
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Verge, John Pomfret: *See—*
Roffey, Patrick; and Verge, John Pomfret, 3,691,160.

Vernazza, Julius, to Krantz, H. Method and equipment for heating gas and maintaining a desired temperature in a plurality of feed ducts. 3,690,626, Cl. 263-19.00a.

Veronica, Giacinto. Process for the preparation of potassium nitrate. 3,690,819, Cl. 23-102.000.

Versadome Corporation: *See—*
Maynard, Baylor H., Jr., 3,690,078.

Vertecs Corporation, Inc.: *See—*
McCain, Samuel B., 3,690,556.

Verti-East, Inc.: *See—*
Hasselbach, Werner; and Pompili, Peter L., 3,691,441.

Vessie, Alexander McIntosh, to Price Company Limited, The. Frozen fish package. 3,690,923, Cl. 117-68.000.

Victor Company of Japan Limited: *See—*
Bojyo, Takuro; and Yamashita, Katsuyuki, 3,690,589.
Honda, Masatsugu; and Shinozaki, Masanobu, 3,691,427.

Villanueva, Juanito O.: *See—*
Garcia, Armando J.; Gunther, Gregory M.; and Villanueva, Juanito O., 3,690,030.

Vinch, Angelo N.; and Kamulski, David A., to Westinghouse Electric Corporation. Safety circuit for electronic machine controls of the plug-in modular type. 3,691,399, Cl. 307-149.000.

Vines, Sterling N.: *See—*
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Vining, Roy H.: *See—*
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Vinnucimbe, Gordon: *See—*
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Voges, Dieter: *See—*
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Vogt, Clifford M.: *See—*
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Vogt, Wilhelm: *See—*
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Voigt Hans: *See—*
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Voith, J. M., GmbH: *See—*
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Thumm, Helmut; and Schaich, Willy, 3,690,572.

Volk, Charles Edward: *See—*
Hays, Robert Guy; Pennell, Charles Ronald; Reed, Edwin Emmett; and Volk, Charles Edward, 3,690,969.

Volker, Herbert. Apparatus for incincrating waste gases. 3,690,840, Cl. 23-277.00c.

Vollhardt, Frohmut, to Siegener Aktiengesellschaft Geisweid. Gas cooler, for cooling synthesis gas, fission gas, and similar gases. 3,690,374, Cl. 165-157.000.

Vollkommer, Norbert; Ismail, Roshdy; and Moustafa, Troidorf, to Dynamit Nobel Aktiengesellschaft. Process for the polymerization of α,α-dialkyl--propiolactones. 3,691,138, Cl. 260-67.30r.

von Fischern, Bernhard; Winkler, Alfred; Fuchsle, Klaus; Zanner, Johann, Jr.; and Ungnadner, Peter, to Agfa-Gevaert Aktiengesellschaft. Projector for use with cassettes for motion picture film. 3,690,751, Cl. 352-125.000.

Von Konig, Anita: *See—*
Scheibitz, Maria; Von Konig, Anita; Kampfer, Helmut; Mayer, Dietmar; Sasse, Klaus; Kolb, Gunter; Honig, Hans Ludwig; and Meiser, Werner, 3,690,884.

Von Roepenack, Adolf; Wuethrich, Hans; and Schmidt, Wilhelm, to Det Norske Zinkkompani A/S. Process for the recovery of zinc from zinc-and iron-containing materials. 3,691,038, Cl. 204-119.000.

von Schmeling, Bogislav: *See—*
Covey, Rupert A.; von Schmeling, Bogislav; and Crittendon, Charles E., 3,690,861.

Vsesojuzny Nauchno-Issledovatelsky i Proektny Institut po Ochistke Tekhnologicheskikh Gazov i Stochnykh Vod i Ispolzovanizu Vtorichnykh Energoresursov Predprinyaty Chernoi Metallurgii: *See—*
Andoniev, Sergei Mikhailovich; Alexandrov, Nikolai Nikitovich; Klochnev, Nikolai Ivanovich; Kulikov, Vasily Ivanovich; and Filipiev, Oleg Vladimitrovich, 3,690,633.

Wachs, Marvin Richard, to Communications Satellite Corporation. Phase distortionless limited. 3,691,466, Cl. 325-347.000.

Wacker-Chemie G.m.b.H.: *See—*
Bauer, Johann; Fendel, Kurt; and Balwe, Thomas, 3,691,080.

Wagner, Klaus; and Roos, Ernst, to Farbenfabriken Bayer Aktiengesellschaft. Certain substituted benzthiazole-N-oxides and their preparation. 3,691,186, Cl. 260-304.000.

Wagner, Ross I.: *See—*
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Wagner, Ross W.: *See—*
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Wainio, Allan C., to Honeywell Inc. Reel mount. 3,690,581, Cl. 242-68.300.

Waite, Frederick Andrew: *See—*
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Wakamatsu, Hisato: *See—*
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Walch, Eugen: *See—*
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Waldes Kohinoor, Inc.: *See—*
Coch, Lester, 3,690,935.

Waldmann, Herbert. Anti-skid arrangement for wheeled vehicles. 3,690,361, Cl. 152-216.000.

Walhof, Elmer T.: *See—*
Walhof, Peter A.; and Walhof, Elmer T., 3,690,016.

Walhof, Peter A.; and Walhof, Elmer T. Screening attachment for grain dryer. 3,690,016, Cl. 34-174.000.

Walker, Albert T., Jr. Lure. 3,690,028, Cl. 43-17.600.

Walker Bank and Trust Co.: *See—*
Brimhall, Ray S., 3,691,019.

Walker, James L.: *See—*
Tarshis, Lemuel A.; and Walker, James L., 3,690,874.

Wall Colmonoy Corporation: *See—*
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Bredzs, Nikolajs; and Miller, Forbes M., 3,690,875.

Waller, John G.: *See—*
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Walsh, Walter Michael, Jr.: *See—*
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Walus, Aloysius N., to Du Pont de Nemours, E. I., and Company. Aqueous dispersions of aziridinyl acrylate or methacrylate acrylic graft copolymers. 3,691,126, Cl. 260-29.6rw.

Wampetich, Matthias J.; and Grichl, Wolfgang, to Inventa AG. Polyester fibres coated with an N-glycidyl compound embedded in a rubber matrix. 3,690,926, Cl. 117-77.000.

Wanesky, William R., to Western Electric Company Incorporated. Releasable mounting method of placing an oriented array of semiconductor devices on the mounting. 3,690,984, Cl. 156-235.000.

Wankling, James Leonard: *See—*
Ellis, Ronald; and Wankling, James Leonard, 3,691,389.

Wanlass, Bert R.: *See—*
Velavicius, Alfonsas; and Wanlass, Bert R., 3,690,036.

Wann, Robert Earl; Nicholson, Denzel Allan; and Logan, Ted Joe. Lubricant composition. 3,691,077, Cl. 252-54.600.

Ware Fuse Corporation: *See—*
Ware, Gordon K., 3,690,501.

Ware, Gordon K., to Ware Fuse Corporation. Electrical outlet box. 3,690,501, Cl. 220-3.940.

Warner & Swasey Company, The, mesne: *See—*
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Mrugala, Theodore A., 3,690,074.

Warner-Lambert Company: *See—*
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Warner-Lambert Pharmaceutical Company: *See—*
Ercoli, Alberto; and Gardi, Rinaldo, 3,691,214.

Warren, John P., to Schlumberger Technology Corporation. Methods and apparatus for investigating earth formations the spontaneous potentical. 3,691,456, Cl. 324-10.000.

Warszawaki, Bernard; and Vandenberghe, Henri, to Societe Generale de Constructions Electriques et Mecaniques (Alshtom). Fuel cell and electrolyte supply system. 3,690,954, Cl. 136-86.000.

Wasp, Edward J., to Beshtec International Corporation. Cap formation in slurry pipelines. 3,690,732, Cl. 302-66.000.

Wasser, Willi: *See—*
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Wassilieff, Victor. Closures for containers. 3,690,519, Cl. 222-402.130.

Waters, Charles A.: *See—*
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Watkins-Johnson Company: *See—*
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Watson, Richard D.: *See—*
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Weaver, Paul J., to Automatic Control Systems, Inc. Machine control utilizing a plurality of control templates and tracer mechanisms. 3,690,200, Cl. 82-14.00a.

Webb, Paul D., to Fraser-Webb Corporation. Engine starter. 3,690,189, Cl. 74-8.000.

Weber, Hans, to Demag Aktiengesellschaft. Process and apparatus for stretch forming metal. 3,690,138, Cl. 72-189.000.

Weber, Paul, AG: *See—*
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Weber, Robert: *See—*
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Weeks, James F.: *See—*
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Weeks, James F.; and Bustos, Ray T., said Bustos assor. to said Weeks, James F. Game apparatus. 3,690,668, Cl. 273-138.00r.

Wegmann, Jacques, to Ciba-Geigy AG. Process for the coating of textiles. 3,690,939, Cl. 117-126.0gb.

Wegmuller, Hans; Kleemann, Alois; and Keller, Rudolf, to Ciba-Geigy AG. Process for the continuous optical brightening of organic fibre material. 3,690,916, Cl. 117-33.50t.

Weinbaum Alejan Dro Sisc: *See—*
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Weinstein, James D.; and Davidson, Barry A., to Scott Paper Company. Flotation apparatus. 3,689,949, Cl. 5-348.000.

Weisgerber, Thomas W., to General Motors Corporation. Wheel lock control differential. 3,690,426, Cl. 192-4.00a.

Weiss, Leopold. Exhaust noise silencer. 3,690,406, Cl. 181-36.00b.

Weiss, Stanley Marian. Cultivating implements. 3,690,385, Cl. 172-604.000.

Wells, Frank Herbert; and Martin, Roger, to United Kingdom Atomic Energy Authority. Apparatus for measuring thickness. 3,690,154, Cl. 73-67.900.

Welty, Lloyd G. Frictional self-draining structure. 3,690,227, Cl. 94-33.000.

Wemac Company: *See—*
Kallel, Allen; and Gowing, Arthur F., 3,690,244.

Wendel, Samuel R., to Dow Corning Corporation. Method of preparing silyl alcohols. 3,691,222, Cl. 260-448.0zc.

Wenzel, Alfred Johannes; and Hantel, Alwin, to Massey-Ferguson G.m.b.H. Apparatus for mounting an accessory on a combine. 3,690,359, Cl. 146-123.000.

Weppner, Benjamin H.; Lefebvre, Leo P.; and Miller, Victor R., to Mennen-Greatbatch Electronics, Inc. Electrically insolated signal path means for physiological monitor. 3,690,313, Cl. 128-2.06b.

Werkzeugmaschinenfabrik Oerlikon-Buhrle AG: *See—*
Muhlemann, Ernst; and Bruun, Jean Eskild, 3,690,219.

Werner, Helmut; and Stapp, Hans, to Akzona Incorporated. Matting of melt-spun amorphous polymer filament and process. 3,691,004, Cl. 161-150.000.

Werst, Gerhard: *See—*
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Wesselingh, Johannes A., to Shell Oil Company. Process for producing carboxylic acids and esters. 3,691,230, Cl. 260-497.00r.

Western Electric Company Incorporated: *See—*
Connell, James C.; Pinnolis, Samuel; and Schmidt, Wilhelm E. A., 3,690,471.
La Valle, Thomas Alvin, 3,689,981.
McClamrock, Grady L., 3,689,989.
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Western Gear Corporation: *See—*
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Western Monolithic Concrete Products: *See—*
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Western Union Telegraph Company, The: *See—*
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Westfall, James E.; Lawson, Arthur L.; and Vercillo, Peter A., to Continental Can Company, Inc. Composite closure. 3,690,499, Cl. 215-40.000.

Westinghouse Air Brake Company: *See—*

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Westinghouse Bremsen- und Apparatebau GmbH: *See*—
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Fisher, Peter D.; Mergerian, Dickron; and Minarik, Ronald W., 3,691,383.
Hoyler, Robert C., 3,691,368.
Lind, Le Roger J., 3,690,785.
Lipscomb, George Winfred, 3,691,547.
Munson, William A., 3,690,632.
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Ruka, Roswell J.; and Panson, Armand J., 3,691,023.
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Wetzlar, Johann Spincic: *See*—
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Weyerhaeuser Company: *See*—
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Weyrich, Arthur G.; Bertrand, Richard R.; and Karinski, Edwin D., to Certron Corporation. Transformer with a fuse. 3,691,425, Cl. 317-15.000.
Wheadon, Ellis G.; and Willmann, Norman L., to General Motors Corporation. Battery plate grid. 3,690,950, Cl. 136-37.000.
Wheeler, J. Stanley, to Unitec Industries, Inc. Apparatus for making cast chain. 3,690,369, Cl. 164-351.000.
Whipple, William D.; and Gifford, Howard W., to Prelude Corporation. Cable clamp and apparatuses for attaching and for detaching the clamp. 3,689,974, Cl. 29-200.00d.
Whisler, Edwin Lee, to Deere & Company. Vehicle cab and safety frame assembly. 3,690,720, Cl. 296-28.00c.
Whitbread, Frederick John: *See*—
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Whitlock, Bruce N.: *See*—
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Whitton, Alden William: *See*—
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Widmaier, Dieter, to Bosch, Robert, G.m.b.H. Apparatus having interconnected hydraulic units operable as pumps, hydraulic motors, and as a hydrostatic transmission. 3,690,097, Cl. 60-53.00b.
Wiesboeck, Robert A., to United States Steel Corporation. Manufacture of boron trifluoride. 3,690,821, Cl. 423-293.000.
Wigham, Jack H. Conveyor belt spacer for potato planters. 3,690,511, Cl. 221-174.400.
Wildhaber, Ernest. Rotary cutter with helically directed cutting teeth arranged in a circle. 3,689,966, Cl. 29-103.00c.
Wilfert, Thomas. Safety control lever. 3,690,195, Cl. 74-473.00r.
Wilhelm, Hans: *See*—
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Wilkerson, Philip E. Apparatus for maintaining uniform yarn tension during unwinding of a yarn package. 3,690,584, Cl. 242-128.000.
Williams, Eugene, to United States Steel Corporation. Stainless steel. 3,690,870, Cl. 75-124.000.
Williams, Herschelic: *See*—
Bown, Delos E.; Neureiter, Norman P.; Schutze, Henry G.; and Williams, Herschelic, 3,691,132.
Williams, Keith A., to Phillips Petroleum Company. Porous electrode having cavity with impervious dome. 3,691,051, Cl. 204-284.000.
Williams, Thomas R., to Sperry Rand Corporation. Solid state memory array. 3,691,535, Cl. 340-173.
Williams, Willie Vincent. Hand-carried yarn splicing device. 3,690,994, Cl. 156-433.000.
Willich, Jean Herbert; and Bruninghaus, Walter; deceased (by Bruninghaus, Gisela; administratrix). Hydraulically damped vehicle suspension device. 3,690,425, Cl. 188-321.000.
Willis, Jack B.: *See*—
Spainhour, Bettye G.; and Willis, Jack B., 3,690,446.
Willis, William D., to Hercules Incorporated. Expandecross-linked polymers of epihalohydrin. 3,691,113, Cl. 260-2.50r.
Willmann, Norman L.: *See*—
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Wilson, Archie R.: *See*—
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Wilson, Dennis L., to Sylvania Electric Products, Inc. Signal processor. 3,691,549, Cl. 340-261.000.
Wilson, Donald R., to Pacific Plantronics, Inc. Telephone user set. 3,691,311, Cl. 179-81.00b.
Wilson, Earl David: *See*—
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Wilson, Woodrow S., to Polytop Corporation. Initially sealed closures with sealing structures. 3,690,514, Cl. 221-81.000.
Winderl, Siegfried: *See*—
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Winn, Oliver H., to General Electric Company. Wound impedence device. 3,691,435, Cl. 317-256.000.
Winona Industries, Inc.: *See*—
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Wisner, William R.: *See*—
Bustraan, Daniel J.; Gossie, Mijo A.; Sundstrom, Roy N.; and Wisner, William R., 3,690,527.
Wiswell, George C., Jr. Repairing or rehabilitating steel supported H-piles. 3,690,110, Cl. 61-54.000.
Witz, Samuel; Carleton, Lee T.; Anderson, Howard H.; Moyer, Rudolph H.; and Neufeld, Harold A., said Witz, Anderson and assor. to Aerojet-General Corporation and said Neufeld assor. to United States of America, Army. Automatic biological agent detector. 3,90,837, Cl. 23-254.00r.
Woehrle, Richard E.: *See*—
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Wolber, Jorg: *See*—
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Wolf, Barnet, to Franco Manufacturing Co., Inc. Towel-pillow combination. 3,689,947, Cl. 5-344.000.
Wolf, David. Pulse reflecting highway signalling system. 3,691,519, Cl. 340-22.000.
Wolf, Milton; and Diebold, James L., to American Home Products Corporation. 5-Arylbenzo[b][1,7]naphthyridine derivatives. 3,691,168, Cl. 260-283.00s.
Wolf, Robert L.; and Cowlin, Christopher J., to Texaco Inc., mesne. Methof of operating a reaction propulsion engine and fuels therefor. 3,690,100, Cl. 60-206.000.
Wolfram, Kittler: *See*—
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Wood, John W., to Black and Decker Manufacturing Company, The. Safety lawnmower blade. 3,690,051, Cl. 56-295.000.
Woodward, Robert Burns. Process for the manufacture of esterified hydroxy compounds. 3,691,042, Cl. 204-158.00r.
Worley, Lajren D.; and Conley, James R., to Coleman Company, Inc., The. Pressure-releasing latch assembly for picnic coolers. 3,690,708, Cl. 292-101.000.
Worster, Hans Edmund; and Pudek, Marian Franciszek, to Bloedel, MacMillan Limited. Two-stage soda-oxygen pulping. 3,691,008, Cl. 162-25.000.
Worthington Biochemical Corporation: *See*—
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Wright, Felix William, to A.P.V. Company Limited, The. Plate heat exchangers. 3,690,373, Cl. 165-119.000.
Wright, Leon W., to Atlas Chemical Industries, Inc. Tungsten oxide promoted and supported nickel catalyst. 3,691,100, Cl. 252-458.000.
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Turner, Lyman H.; Kukucka, William P.; and Summers, James E., 3,690,537.
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Yamada, Hideo: *See*—

Kataoka, Shoei; Tateno, Hiroshi; Fujisada, Hiroyuki; Kawashima, Mitsuo; Komamiya, Yasuo; and Yamada, Hideo, 3,691,481.
Yamada, Katsuo, to Nissan Motor Company, Limited. Parking brake for automatic transmission. 3,690,416, Cl. 188-69.000.
Yamagishi, Hidehisa; Yokoi, Fumitoshi; and Takahashi, Tadao, to Nippon Kokan Kabushiki Kaisha. Preventing rusting of steel sheets coated with aqueous slurry of metal powder. 3,690,940, Cl. 117-131.000.
Yamaguchi, Hiroyoshi; Iwaki, Akio; and Tokura, Hirosi, to Konishiroku Photo Industry Co., Ltd. Photoresist composition. 3,690,890, Cl. 96-90.00r.
Yamaguchi, Ken: *See—*
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Zeitter, Charles R., to Packaging Corporation of America. Folding carton. 3,690,543, Cl. 229-39.000.
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Zwicky, Robert W.; and Gies, Robert M. Oil recovery using steam-chemical drive fluids. 3,690,376, Cl. 166-272.000.

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Berlant, George, to New Hermes Engraving Corp. Alphabet for monograms or the like. 224,756, 9–12–72, Cl. D64—16.

Bingham, Harry R. Marine horn. 224,759, 9–12–72. Cl. D72—1.

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Bonzer, Lawrence W., to Lear-Siegler, Inc. Plug-in food and beverage warmer for an automobile. 224,752, 9–12–72, Cl. D44—26.

Breed, Charles P., E. L. Izzi, and D. E. Husby, to Westinghouse Electric Corp. Luminaire. 224,753, 9–12–72, Cl. D48—31.

Chernack, Milton P., to Delcron Products, Inc. Cigarette holder. 224,760, 9–12–72, Cl. D85—8.

Cohen, Samuel. Clock radio. 224,749, 9–12–72, Cl. D42—7.

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11 3,690,233
3,690,234
11.5R 3,690,236
3,690,237
13 3,690,238
3,690,239
42 3,690,240
3,690,241
82 3,690,242

CLASS 96
1R 3,690,877
1.8 3,690,878
3 3,690,879
27 3,690,881
28 3,690,882
29L 3,690,883
29R 3,690,885
29 3,690,884
33 3,690,880
50 3,690,871
66HD 3,690,872
88 3,690,886
3,690,887
90R 3,690,890
90 3,690,889
94 3,690,888
108 3,690,891
110 3,690,892

CLASS 98
40A 3,690,244
40D 3,690,243
115K 3,690,245

CLASS 99
80R 3,690,893
3,690,895
81 3,690,896
3,690,897
83 3,690,894
86 3,690,898
111 3,690,899
140N 3,690,900
159 3,690,901
172 3,690,902
174 3,690,903
336 3,690,246
355 3,690,247
450.2 3,690,248

CLASS 101
95 3,690,249
3,690,250
142 3,690,251
147 3,690,252
217 3,690,253
350 3,690,254

CLASS 102
39 3,690,255
43R 3,690,256
67 3,690,257
70R 3,690,258
70.2 3,690,259
86.5 3,690,260

CLASS 104
7R 3,690,262
8 3,690,263
17R 3,690,264
70 3,690,265
123 3,690,266
165 3,690,267
172S 3,690,268
3,690,269

CLASS 105
197D 3,690,270
199R 3,690,271
366R 3,690,272

CLASS 106
39R 3,690,904
47Q 3,690,905
3,690,908
302 3,690,906
306 3,690,907

CLASS 112
121.11 3,690,273
158R 3,690,274
240 3,690,275
252 3,690,276
267 3,690,277

CLASS 113
1G 3,690,278
120AA 3,690,279

CLASS 114
41 3,690,281
43.5 3,690,282
67A 3,690,283
152 3,690,284
206R 3,690,285
219 3,690,280

CLASS 116
86 3,690,286
119 3,690,295

124 3,690,287
CLASS 117
6 3,690,909
7 3,690,910
17 3,690,911
17.5 3,690,912
23 3,690,913
26 3,690,914
33.3 3,690,915
33.5T 3,690,916
3,690,947
34 3,690,917
3,690,918
39 3,690,919
45 3,690,920
54 3,690,921
57 3,690,922
68 3,690,923
68.5 3,690,924
76T 3,690,925
77 3,690,926
93.31 3,690,927
97 3,690,928
100A 3,690,931
100B 3,690,929
3,690,930
106R 3,690,932
107.1 3,690,933
107.2P 3,690,934
109 3,690,935
122H 3,690,936
122P 3,690,937
122S 3,690,938
126GB 3,690,939
131 3,690,940
136 3,690,941
138.8F 3,690,942
160R 3,690,944
212 3,690,943
215 3,690,945
235 3,690,946
CLASS 118
6 3,690,288
48 3,690,289
3,690,290
49.1 3,690,291
59 3,690,292
63 3,690,293
112 3,690,294
227 3,690,296
410 3,690,297
629 3,690,298
CLASS 119
1 3,690,299
14.08 3,690,300
18 3,690,301
CLASS 122
11 3,690,302
406S 3,690,303
CLASS 123
32G 3,690,768
73V 3,690,304
97B 3,690,305
119R 3,690,306
136 3,690,307
CLASS 127
46A 3,690,948
CLASS 128
2A 3,690,309
2N 3,690,308
2R 3,690,310
2V 3,690,311
2.05D 3,690,312
2.06B 3,690,313
66 3,690,314
130 3,690,316
194 3,690,317
214E 3,690,318
251 3,690,319
275 3,690,315
283 3,690,320
285 3,690,321
305 3,690,322
350R 3,690,323
359 3,690,324
419R 3,690,325
CLASS 131
10.5 3,690,326
21R 3,690,327
140R 3,690,328
201 3,690,329
CLASS 132
46 3,690,330
120 3,690,331
CLASS 133
2 3,690,332
CLASS 134
3,690,949
95 3,690,333
CLASS 135
1R 3,690,334
CLASS 136
37 3,690,950
83R 3,690,952
86R 3,690,951
3,690,954
89 3,690,953
226 3,690,955
CLASS 137
54 3,690,335
75 3,690,336
81.5 3,690,337
3,690,338
3,690,339
93 3,690,340
101 3,690,341
344 3,690,342
3,690,343
625.28 3,690,344
625.62 3,690,345
625.65 3,690,346
CLASS 138
30 3,690,347
97 3,690,348
CLASS 140
63 3,690,349
93.2 3,690,350
CLASS 144
2Z 3,690,351
3,690,352
34R 3,690,353
3,690,354
39 3,690,355
136R 3,690,356
232 3,690,357
CLASS 146
119 3,690,358
123 3,690,359
CLASS 148
2 3,690,956
3,690,959
3 3,690,957
3,690,958
6.27 3,690,960
11.5F 3,690,961
32 3,690,962
126 3,690,963
171 3,690,964
172 3,690,965
187 3,690,966
3,690,967
188 3,690,968
3,690,969
CLASS 149
2 3,690,970
19 3,690,971
3,690,972
60 3,690,973
CLASS 150
52A 3,690,360
CLASS 152
216 3,690,361
359 3,690,362
3,690,363
361 3,690,364
CLASS 156
51 3,690,974
62.2 3,690,975
90 3,690,976
148 3,690,982
167 3,690,977
3,690,978
182 3,690,979
199 3,690,980
210 3,690,981
230 3,690,983
235 3,690,984
254 3,690,985
257 3,690,986
3,690,987
353 3,690,988
403 3,690,989
412 3,690,992
429 3,690,993
433 3,690,994
441 3,690,990
3,690,991
478 3,690,995
542 3,690,996
567 3,690,997
CLASS 160
135 3,690,365
CLASS 161
16 3,690,998
39 3,690,999
60 3,691,000
96 3,691,001
137 3,691,002
150 3,691,004
159 3,691,003
167 3,691,005
3,691,006
213 3,691,007
CLASS 162
25 3,691,008
146 3,691,009
206 3,691,010
CLASS 164
25 3,690,366
335 3,690,367
350 3,690,368
351 3,690,369
CLASS 165
22 3,690,370
35 3,690,371
64 3,690,372
119 3,690,373
157 3,690,374
CLASS 166
187 3,690,375
272 3,690,376
288 3,690,377
298 3,690,380
299 3,690,378
3,690,379
315 3,690,381
CLASS 171
56 3,690,382
126 3,690,383
CLASS 172
15 3,690,384
604 3,690,385
804 3,690,386
CLASS 173
43 3,690,387
CLASS 174
28 3,691,287
38 3,691,288
52PE 3,691,289
68.5 3,691,290
73R 3,691,291
128 3,691,292
CLASS 175
20 3,690,388
59 3,690,389
388 3,690,390
CLASS 176
30 3,691,011
CLASS 177
1 3,690,391
59 3,690,392
CLASS 178
5.8R 3,691,293
7.2 3,691,302
46 3,691,294
58 3,691,295
69.5TV 3,691,297
69.5F 3,691,296
CLASS 179
1VL 3,691,298
2DP 3,691,299
6E 3,691,300
7.1R 3,691,301
8A 3,691,303
15AW 3,691,305
15BF 3,691,306
15R 3,691,304
18AB 3,691,309
18AD 3,691,310
18BH 3,691,308
18J 3,691,307
81B 3,691,311
100.2S 3,691,313
3,691,314
100.2T 3,691,315
100.2Z 3,691,312
100.41P 3,691,317
3,691,318
100.41V 3,691,316
156A 3,691,319
175.2R 3,691,320
CLASS 180
1 3,690,393
5R 3,690,394
6.48 3,690,395
9.2R 3,690,396
65R 3,690,397
66R 3,690,398
75 3,690,399
79.2R 3,690,400
124 3,690,401
CLASS 181
.5VM 3,690,402
.5H 3,690,403
24 3,690,404
31B 3,690,405
36B 3,690,406
CLASS 182
119 3,690,407
141 3,690,408
142 3,690,409
CLASS 184
6.28 3,690,410
CLASS 186
1A 3,690,411
CLASS 187
2 3,690,412
CLASS 188
1B 3,690,413
3,690,414
69 3,690,415
3,690,416
71.8 3,690,417
79.5K 3,690,418
134 3,690,419
195 3,690,420
203 3,690,421
264D 3,690,422
271 3,690,423
314 3,690,424
321 3,690,425
CLASS 191
44.1 3,691,321
CLASS 192
3,690,800
4A 3,690,426
24 3,690,427
58B 3,690,428
85AA 3,690,429
CLASS 194
94 3,690,430
CLASS 195
28R 3,691,012
31R 3,691,013
62 3,691,014
66R 3,691,015
103.5R 3,691,017
3,691,018
368 3,691,016
CLASS 197
1R 3,690,431
98 3,690,432
CLASS 198
19 3,690,433
20R 3,690,434
20 3,690,435
22 3,690,436
33AA 3,690,437
34 3,690,438
110 3,690,439
127R 3,690,440
131 3,690,441
133 3,690,442
165 3,690,444
182 3,690,443
196 3,690,445
CLASS 200
1V 3,691,322
4 3,691,323
5E 3,691,324
6C 3,691,325
11TW 3,691,326
42R 3,691,327
43 3,691,328
50A 3,691,329
61.19 3,691,330
67DB 3,691,331
144B 3,691,332
153J 3,691,333
3,691,334
162 3,691,335
166H 3,691,336
CLASS 202
118 3,691,019
CLASS 203
25 3,691,020
65 3,691,021
71 3,691,022
CLASS 204
1T 3,691,023
15 3,691,024
3,691,025
28 3,691,026
29 3,691,027
32R 3,691,028
3,691,030
37R 3,691,029
38S 3,691,055
39 3,691,031
40 3,691,032
54R 3,691,033
73A 3,691,034
3,691,035
99 3,691,036
3,691,037
119 3,691,038
132 3,691,039
147 3,691,040
152 3,691,041
158R 3,691,042
163HE 3,691,043
180R 3,691,044
192 3,691,045
3,691,046
195M 3,691,047
206 3,691,049
219 3,691,050
245 3,691,048
284 3,691,051
290F 3,691,052
298 3,691,053
299 3,691,054
CLASS 206
1 3,690,446
8 3,690,447
15.1 3,690,448
29 3,690,449
45.19 3,690,450
52F 3,690,451
56C 3,690,452
65S 3,690,453
CLASS 208
11 3,691,056
73 3,691,058
80 3,691,059
87 3,691,061
89 3,691,060
3,691,062
91 3,691,063
136 3,691,064
159 3,691,065
210 3,691,152
216 3,691,057
255R 3,691,066
264 3,691,067
CLASS 209
38 3,690,454
72 3,690,455
73 3,690,456
80.5 3,690,457
111.6 3,690,458
CLASS 210
22 3,691,068
29 3,691,069
80 3,690,459
130 3,690,460
222 3,690,461
225 3,690,462
242 3,690,463
3,690,464
321 3,690,465
387 3,690,466
CLASS 211
133 3,690,467
CLASS 212
84 3,690,468
CLASS 213
212 3,690,469
CLASS 214
1BB 3,690,470
1BT 3,690,471
1P 3,690,472
6B 3,690,473
7 3,690,474
8.5SS 3,690,475
3,690,476
8.5B 3,690,477
16.4A 3,690,479
16.4R 3,690,478
17D 3,690,480
85 3,690,481
86A 3,690,482
137 3,690,483
305 3,690,484
310 3,690,485
3,690,486
340 3,690,487
383 3,690,488
390 3,690,489
506 3,690,490
3,690,491
620 3,690,492
3,690,493
774 3,690,494
CLASS 215
9 3,690,495
3,690,496
3,690,498
40 3,690,497
3,690,499
CLASS 219
8.5 3,691,337
10.55 3,691,338
10.57 3,691,339
121EM 3,691,341
146 3,691,340
213 3,691,343
233 3,691,342
321 3,691,344
345 3,691,345
374 3,691,346
532 3,691,348
535 3,691,347
549 3,691,349
CLASS 220
1B 3,690,500
3.94 3,690,501
26D 3,690,502
39R 3,690,503
42C 3,690,504
46MS 3,690,505
54 3,690,506
66 3,690,507
3,690,508
90.6 3,690,509
CLASS 221
75 3,690,510
174 3,690,511
188 3,690,512
CLASS 222
55 3,690,513
81 3,690,514
136 3,690,515
340 3,690,516
358 3,690,517
402.13 3,690,519
499 3,690,520
504 3,690,518
507 3,690,521
529 3,690,522
538 3,690,523
573 3,690,524
CLASS 224
9 3,690,525
42.07 3,690,526
CLASS 225
4 3,690,527
37 3,690,528
CLASS 226
76 3,690,529
97 3,690,530
136 3,690,531
149 3,690,532
165 3,690,533
172 3,690,534
190 3,690,535
CLASS 227
10 3,690,536
88 3,690,537
CLASS 228
3 3,690,538
20 3,690,539
CLASS 229
14 3,690,540
17B 3,690,541
30 3,690,542
39 3,690,543
51TC 3,690,544
57 3,690,545
CLASS 235
61.11C 3,691,352
61.7B 3,691,350
61.8A 3,691,351
70R 3,690,547
92EV 3,691,353
150.1 3,691,354
150.22 3,691,356
150.27 3,691,361
151.1 3,691,355
151.11 3,691,357
159 3,691,358
164 3,691,359
168 3,691,360
181 3,691,364
186 3,691,363
193 3,691,362
CLASS 236
1C 3,690,548
CLASS 237
2A 3,690,549
81 3,690,550
CLASS 238
349 3,690,551
CLASS 239
2R 3,690,552
3 3,690,553
17 3,690,554
61 3,690,555
112 3,690,556
3,690,557
127 3,690,558
163 3,690,559
195 3,690,560
265.29 3,690,561
3,690,562
346 3,690,563
424.5 3,690,564
447 3,690,565
453 3,690,566
591 3,690,567
CLASS 240
1.3 3,691,365
8.3 3,691,366
10.68 3,691,367
CLASS 241
15 3,690,568
17 3,690,569
34 3,690,570
46R 3,690,571

151 3,690,572
207 3,690,573
281 3,690,574

CLASS 242

18DD 3,690,576
3,690,578
18PW 3,690,577
18A 3,690,575
43 3,690,579
55.3 3,690,580
68.3 3,690,581
71.1 3,690,582
78.1 3,690,583
128 3,690,584
129.8 3,690,585
131 3,690,586
181 3,690,587
189 3,690,588
191 3,690,589
194 3,690,590
204 3,690,591

CLASS 243

29 3,690,592
34 3,690,593

CLASS 244

3.13 3,690,594
3.21 3,690,596
3.27 3,690,595
23C 3,690,597
77D 3,690,598
114R 3,690,599
120 3,690,600
134A 3,690,601
137R 3,690,602
145 3,690,603
148 3,690,604
149 3,690,605

CLASS 245

1 3,690,606

CLASS 246

29R 3,691,368
40 3,691,369
125 3,691,370
393 3,691,371

CLASS 248

20 3,690,607
68B 3,690,609
159 3,690,610
205A 3,690,611
371 3,690,608
467 3,690,612

CLASS 249

40 3,690,613
90 3,690,614

CLASS 250

49.5TE 3,691,376
49.5ZC 3,691,373
3,691,375
49.5A 3,691,377
49.5D 3,691,374
71.5R 3,691,378
3,691,379
83CD 3,691,380
83.3H 3,691,383
83.3R 3,691,381
3,691,382
91 3,691,385
106SC 3,691,386
199 3,691,387
3,691,388
211J 3,691,389
217SS 3,691,390
218 3,691,391
219DD 3,691,392
219D 3,691,372
584.5 3,691,384

CLASS 251

31 3,690,615
38 3,690,616

CLASS 252

8.5B 3,691,070
8.55D 3,691,071
3,691,072
24 3,691,073
25 3,691,074
33 3,691,075
42.1 3,691,094
42.7 3,691,076
54.6 3,691,077
59 3,691,078
62.9 3,691,079
89 3,691,081
98 3,691,082
182 3,691,083
3,691,084
188.3 3,691,085
301.1S 3,691,087
301.6S 3,691,088
313S 3,691,089
316 3,691,090
329 3,691,086
358 3,691,091
364 3,691,092
420 3,691,093
428 3,691,095
437 3,691,096
440 3,691,097
441 3,691,098
450 3,691,099
455Z 3,691,101
458 3,691,100
469 3,691,102
473 3,691,103
501 3,691,104
519 3,691,105
544 3,691,106
3,691,107
555 3,691,108

CLASS 254

141 3,690,617

CLASS 256

10 3,690,618
13.1 3,690,619
64 3,690,620

CLASS 259

96 3,690,621
169 3,690,622
192 3,690,623

CLASS 260

2EP 3,691,110
2A 3,691,111
2S 3,691,119
2.1R 3,691,109
2.5AJ 3,691,114
2.5AM 3,691,112
2.5R 3,691,113
18TN 3,691,117
18N 3,691,116
19UA 3,691,118
27EV 3,691,120
29.1R 3,691,122
3,691,123
29.3 3,691,121
29.6RW 3,691,126
29.6WB 3,691,124
3,691,125
29.6T 3,691,127
33.6A 3,691,129
34.2 3,691,128
41B 3,691,130
45.75C 3,691,131
45.85 3,691,132
47EC 3,691,133
77.5AP 3,691,135
77.5AT 3,691,134
78TF 3,691,136
78R 3,691,137
78.3R 3,691,138
78.4R 3,691,139
78.5CL 3,691,080
78.5 3,691,140
80.78 3,691,141
3,691,142
85.5 3,691,143
93.1 3,691,144
94.9R 3,691,145
111 3,691,146
112.5 3,691,147
158 3,691,148
174 3,691,149
209R 3,691,153
209.6 3,691,150
210K 3,691,151
219 3,691,154
233.3R 3,691,155
239BA 3,691,158
239.3D 3,691,156
3,691,157
239.3T 3,691,159
240A 3,691,160
240.7 3,691,161
243B 3,691,163
243D 3,691,162
249.8 3,691,164
250A 3,691,165
250R 3,691,166
251A 3,691,167
283CN 3,691,170
283S 3,691,168
3,691,169
287R 3,691,171
289R 3,691,172
290R 3,691,174
293.5A 3,691,175
293.5S 3,691,173
293.7S 3,691,176
294.9 3,691,177
3,691,178
295.5P 3,691,181
295.5S 3,691,179
3,691,180
296P 3,691,182
302SD 3,691,183
302D 3,691,184
304 3,691,186
3,691,187
306.7 3,691,188
307H 3,691,189
3,691,190
308D 3,691,191
309 3,691,192
310R 3,691,193
326.12R 3,691,199
326.13R 3,691,194
326.14R 3,691,200
326.3 3,691,195
3,691,196
326.8 3,691,197
3,691,198
327M 3,691,201
332.2A 3,691,202
335 3,691,203
345.9 3,691,205
346.2M 3,691,204
348SC 3,691,206
349 3,691,207
378 3,691,208
3,691,209
380 3,691,210
397.25 3,691,211
397.4 3,691,212
3,691,213
397.45 3,691,214
3,691,215
408R 3,691,216
408 3,691,217
410.7 3,691,218
3,691,219
429.9 3,691,220
437R 3,691,221
448.2E 3,691,222
453AL 3,691,223
3,691,225
465E 3,691,227
465.3 3,691,224
465.9 3,691,226
468R 3,691,228
481R 3,691,229
497R 3,691,230
523R 3,691,231
531R 3,691,232
533R 3,691,233
545R 3,691,234
3,691,235
561R 3,691,236
564R 3,691,237
621A 3,691,238
652P 3,691,239
654D 3,691,240
668B 3,691,241
3,691,242
668F 3,691,244
669R 3,691,243
671R 3,691,245
3,691,246
674A 3,691,247
677H 3,691,115
3,691,248
677R 3,691,249
3,691,250
683D 3,691,253
683R 3,691,251
3,691,254
683.62 3,691,252
683.68 3,691,255
825 3,691,256
827 3,691,257
850 3,691,258
861 3,691,259
876R 3,691,260
881 3,691,261
890 3,691,262
923 3,691,277
942 3,691,278
961 3,691,275
973 3,691,276

CLASS 261

18A 3,690,624
36A 3,690,625

CLASS 263

19A 3,690,626
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